PROCEEDINGS
NORTHERN POPULATION WORKSHOPS I

ACTES DU PREMIER COLLOQUE
SUR LES POPULATIONS NORDIQUES

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ACTES DU PREMIER COLLOQUE
SUR LES POPULATIONS NORDIQUES

NORTH HATLEY, QUEBEC, CANADA

MAY 1976

EDITOR

PAULA WESTON WELLS

PROJECT CO-ORDINATOR

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LIST OF CONTENTS

	page
Foreword.....	1
Members of the Steering Commitee.....	2
Objective I.....	4
The collecting and compiling of demographic data on Greenland to assist in policy making, planning,public administration and demographic research between 1950 and 1975. *Hans O. Hansen*.....	5
Alaskan demographic data and research. *Daniel A. Seiver*.....	18
Demography of the Inuit in New Quebec: A great unknown. *Louise Normandeau*.....	29
Demographic experience in the Unnava area of New Quebec. *Francine Tremblay*.....	44
Demographic data on the Yukon Territory and the Northwest Territories. *R. Raghunathan*.....	48
The James Bay agreement and its effect upon the collection of data on the population of Northern Quebec. *Ginette Lachance-Frulotte*.....	63
Objective II.....	71
A framework for demographic research on the North. *Andrew J. Siggner*.....	72
Can we make better use of existing data? A Northern Saskatchewan experiment. *John Beveridge*.....	86
Demographic research in Northern Manitoba. *W. Henderson*.....	114

The Inuit population of New Quebec.
Denis Lachance..... 128

1970 All-union census of population of the U. S. S. R.-Observations on the methodology employed to enumerate the Northern native minorities.
G. Sucharczuk and W. Slinchenko..... 150

Objective III..... 169

The need for data: balancing the right to privacy with the need to know.
Nancy Howell..... 170

Some considerations on population and self-sufficiency: Northern Quebec.
Lorraine Brooke..... 173

Stress and response: demographic and cultural change in the Canadian Arctic.
Pon Duffy..... 185

"Equality" and " Special Status": native policy in the Northwest Territories.
Douglas Sanders..... 195

Good guys and bad guys: ethical problems in demographic research.
D. Whiteside..... 203

List of participants..... 216

FOREWORD

In May 1976, Northern Demography Workshop I, sponsored by the Department of Indian and Northern Affairs, and organized by the Arctic Institute of North America, was held at North Hatley, Quebec. Of the 33 participants, 17 presented papers.

As the meeting progressed, it became apparent that while there was a data problem, there was also a need to understand demography in its broader sense, particularly its social dynamics. It was, therefore, decided that the Workshop's name should be changed to that of NORTHERN POPULATION WORKSHOP I.

The papers have now been edited and form the proceedings of the Workshop and a follow-up of the Summary Report which was published in the fall of 1976.

To quote Mr. Keith R. Greenaway, the General Chairman of the Workshop:

> "The work is only just beginning. The results of this Workshop will have to be reviewed, techniques revised, guidelines refined and activities redirected. The focus, however, is now on a field of research which has been neglected for far too long and which, in the near future, may be called upon to provide accurate, timely and vital data on an area of importance to all Canadians."

PWW.

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NORTHERN POPULATION WORKSHOP I

OBJECTIVE I
DAY I

(a) To review the quality and quantity of statistical compilations on demographical material available for northern Canada;

To discuss the experience of researchers using existing statistical data;

To recommend to statistical collecting agencies measures to improve and broaden the range of available data; and

(b) To provide a technical forum for the discussion of the problems of statistical methodology associated with the unique population characteristics of the northern territories (viz. small populations, ethnicity, etc.).

CHAIRMAN: Professeur Jacques Légaré

THE COLLECTING AND COMPILING OF DEMOGRAPHIC DATA ON GREENLAND TO ASSIST IN POLICY MAKING, PLANNING, PUBLIC ADMINISTRATION AND DEMOGRAPHIC RESEARCH BETWEEN 1950 and 1975.

La collecte et la compilation des données démographiques sur le Groenland, entre 1950 et 1975, destinées à seconder les politiques de population, la planification, l'administration publique et la recherche démographique.

HANS OLUF HANSEN [1]

ABSTRACT.- The modern era of transition in Greenland- economically, socially, politically and culturally- began about 1950. In 1953, equal status with the Danes was granted to the population of Greenland and this is gradually leading to an extension of the Danish standard of living to the former colony. This includes participation in a public welfare system of the Scandinavian type which provides social security for the individual, and certain public services within the framework of a liberal economy. However, due to the scarcity of available opportunities in Greenland and the smallness of the population - 49,000 in 1975 - public works have dominated the economic scene so far.

Population data (census-taking by civil authorities and parish registration) have been collected, processed and applied along identical administrative lines in Greenland and in Denmark since the early 19th century, although with shifting definitions of ethnicity. The problems involved in defining consensual unions and various types of illegitimacy, and in acquiring data on these issues apply to both societies. Standard types of reliable and detailed demographic statistics characterizing modern and highly developed societies are now available for both populations.

RESUME. - Au Groenland, le début de la transition économique, sociale, politique et culturelle se situe aux environs de 1950. En 1953, le Groenland obtient pour sa population un statut égal à celui des autres

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Danois ce qui implique pour eux, d'une part une hausse du niveau de vie et d'autre part le droit à un système de sécurité sociale, et ce dans le cadre d'une économie libérale. Toutefois, étant données la faible taille de la population (49,000 habitants en 1975) et la rareté des possibilités d'expansion économique, l'accent fut mis sur l'investissement public.

La collecte de données démographiques doit être vue comme une conséquence de la mise en place de structures politiques et administratives; c'est dans ce contexte qu'on doit juger la quantité, la qualité et la disponibilité des statistiques démographiques au Groenland. Depuis la 19e siècle les données de population (recensements menés par les autorités civiles et enregistrements paroissiaux) ont été recueillies, compilées de façon similaire au Groenland et au Danemark. La seule différence réside dans la définition de l'origine ethnique. Les deux régions ont à faire face aux mêmes problèmes de définition des unions consenuelles et des naissances illégitimes.

L'auteur conclue en démontrant qu'au Groenland comme au Danemark, sont maintenant disponibles des données démographiques bien détaillées et sûrement dignes de confiance.

INTRODUCTION

Demographic data acquisition may be described as a consequence of given political settings and administrative structures. It is in this context, therefore, that one should judge the quality, quantity, and availability of demographic statistics for Greenland. Taking fertility as a factor in the economic, social and demographic changes that have occurred in the past 25 years, any review of the official compilations of population statistics for Greenland would have to consider problems such as difficulties of definition,and choice of relevant statistical methodology for demographic analysis of small populations.

Modern Greenland - economically,socially,politically and culturally - may be said to have come into being about 1950. Constitutional revision initiated at that time, and voted for in 1953, gave equal status to Denmark and Greenland (formerly a Danish colony), and had as its objective

the extension of the Danish standard of living, including the public welfare system, to Greenlanders. It should be noted that a public welfare system of the Scandinavian type may be regarded as a "material safety net" which assures a minimum standard of living to the individual and a certain amount of public services to all. Due to the scarcity of available economic opportunities and the smallness of the population - 49,000 in 1975 (Table I) - public investment has remained by far the dominant factor of the economy (Table II).

Changes in the official population policy were already in preparation at the outbreak of World War II, and until 1948, it had been envisaged that Greenland would remain an economic, self-supporting society from which foreign influences would be barred. The desire for reform in Greenland was raised again after the end of World War II, and the new policies formulated with regard to economics and to population proved to be a dramatic departure from the former concepts of a Greenland economy based on the local population. The promotion of urbanization through highly-controlled localisation of investment and carefully planned public services were central to these policies, and these public investments and working expenses for the period 1950-1975 were financed by Denmark. With these changes there occurred a simultaneous demographic transition whose consequences on Greenland were to become far-reaching (Table III).

QUALITY, QUANTITY AND AVAILABILITY

Data acquisition

Greenland came under Danish sovereignty in 1380, but relations between the colony and Denmark were officially established only in 1721 when Hans Egede, the Norwegian missionary, was sent out by the King to colonize a few settlements on the shores of Western Greenland which had been founded by Norsemen in the age of the Vikings. A general system of parish registration had been inaugurated in 1646, not only in Denmark and Norway under the dual monarchy which then existed for these two countries, but also in Sweden. By extending the Scandinavian system of parish registration to the local Eskimo communities, these early missionaries were able to lay the data foundation for future demographic analyses of the population of Greenland, which was later to become the basis of modern planning and public administration for the area.

The Church of Greenland became a branch of the established Danish Lutheran Church in the 18th century, and there are

TABLE I

The population in Greenland
by ethnical background and by administrative region
between 1805 and 1975[1]

Census Year	Southern Greenland		Northern Greenland		Western Greenland		Eastern Greenland		Outside adm. div.		All Greenland		
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	Total
1805	...	3.516	...	2.530	...	6.046	...	...	...	...	...	...	...
1840	120	5.250	131	2.747	251	7.997	...	...	...	...	251	...	...
1860	124	6.023	108	3.739	232	9.762	...	...	...	...	232	...	...
1880	202	5.659	78	4.263	280	9.922	...	...	...	...	280	...	...
1890	225	5.832	84	4.600	309	10.432	...	...	...	...	309	...	...
1901	183	6.052	79	5.138	262	11.190	10	431	...	...	272	11.621	11.893
1911	280	6.652	102	5.858	382	12.510	2	565	...	...	384	13.075	13.459
1921	205	7.386	61	6.015	266	13.401	8	680	...	...	274	14.081	14.355
1930	285	8.487	114	6.858	399	15.345	9	877	...	...	408	16.222	16.630
1945	...	...	...	...	380	20.824	18	1.354	...	...	580	20.832	21.412
1951	...	...	...	...	1.106	21.356	163	1.534	...	...	1.269	22.890	24.159
1955	...	...	...	...	1.672	23.416	195	1.818	...	...	1.867	25.234	27.101
1960	...	...	...	...	2.494	28.175	268	2.203	...	...	2.762	30.378	33.140
1965	...	...	...	...	4.181	32.551	304	2.577	...	...	4.485	35.128	39.613
1970	...	...	...	...	6.589	36.244	326	2.637	705	31	7.620	38.912	46.532
1975	...	...	...	...	7.779	37.218	324	2.725	1.420	36	9.523	39.979	49.502

(1) Until 1930 'Europeans'; 1945 and 1951: 'Persons under the law of Greenland; 1955 onwards: 'Persons born outside Greenland. (2) Until 1930: 'Natives'; 1945 & 1951: 'Persons under Danish law; 1955 onwards: 'Persons born in Greenland. Source: Official census statistics.

NOTE: Western Greenland = Northern + Southern Greenland

TABLE II

Public investments in Greenland - 1951-1973[1] and planned investments during 1974-1978[2]

Economic sector	1951-55	1956-60	1961-65	1966-70	1973	1974-78
	proportions (per 100)					
Export trades	5,2	7,7	9,1	8,1	10,3	3,5
Public institutions, etc.	20,4	15,4	8,5	13,1	20,1	14,6
Housing	29,9	30,0	32,3	34,9	29,3	32,8
Public works, etc.	18,9	18,3	14,0	16,2	18,0	21,1
Communication & Transport	8,5	17,9	16,5	10,0	8,7	9,6
The supply service	8,8	4,0	7,2	6,0	6,6	8,8
Projects in support of industry and trade	1,7	3,3	9,9	3,6	3,3	-
Other projects	6,6	3,4	2,5	4,5		3,5
Social institutions	-	-	-	3,6	3,5	4,3
Other investments	-	-	-	-	-	1,8
Total	100,0	100,0	100,0	100,0	100,0	100,0
Millions of Kroner	150,5	230,1	576,0	1.442,7	329,9	1.925,5

[1] Grønland 1974, Annual Report from the Ministry of Greenland, pp. 48° - 51° (1975)

[2] Exclusive, lone weather stations and telecommunications centres, Søndre Strømfjord, Narssarssuaq, Faeringehavn, and Denmark.

TABLE III

Infant mortality, life expectancies at birth
and measures of growth and reproduction, Greenland
1946 - 1974[1]

Period	$_1q_0$		e_0		TFR			GRR	NRR	μ	σ^2	T	r
	(1)	(2)	(1)	(2)	(3)	(4)	(5)						
1946-51	188,0	157,0	32,2	37,5	...	...	6,03	2,942	1,766	29,41	54,357918	28,88	0,019686
1952-55	101,0	99,0	47,5	48,4	9,70	3,36	5,70	2,779	2,104	29,49	51,152891	28,83	0,025806
1956-60	85,6	83,4	54,0	59,7	9,85	4,41	6,51	3,173	2,724	29,33	50,750667	28,43	0,035242
1961-65	80,8	66,4	56,3	63,7	9,76	4,51	6,82	3,326	2,972	28,73	47,506878	27,80	0,039177
1966-70	64,0	46,9	59,1	66,2	7,43	3,71	5,85	2,852	2,615	27,78	43,245540	28,09	0,035600
1971-74	48,6	37,8	60,4	66,8	4,47	2,31	2,75	1,342	1,247	26,72	44,537039	26,53	0,008306
1974	39,6	23,9	...	...	...	...	2,23	1,086	1,011	26,04	36,394419	26,07	0,000423

... : Data not available
(1) : Males
(2) : Females
(3) : In marriage
(4) : Outside marriage
(5) : All females

$_1q_0$: Infant mortality
e_0 : Life expectancy at birth
TFR: Total rate of fertility
GRR: Gross reproduction rate
NRR: Net reproduction rate
μ : Maternal mean age
σ^2: Empirical variance on u
T : Mean length of generation
r : Intrinsic rate of natural growth

[1] Hansen, H.O. From natural to controlled fertility: studies in fertility as a factor of economic and social development in Greenland c. 1851-1975 . Paper to be presented at the Seminar on Natural Fertility in Paris, March 1977, under the sponsorship of l'Institut National d'Etudes Démographiques and The International Union for the Scientific Study of Population.

still extant a number of parish registers dating back to that time. In the early 19th century, a system of duplicate records was inaugurated, one based on census records and the other on parish registers. Danish administrators were thus able to augment the registration of the movements of population to be found in these registers with regular censuses (every five years between 1935 and 1860 and between 1945 and 1970; and every 10 years between 1860 and 1930).

The Church remained in charge of census-taking in Denmark until 1860, and in Greenland until the outbreak of World War II. General population registers, maintained by the civil authorities, were introduced in Denmark in 1924, and in Greenland in 1963. Computerized versions of these registers have been available in Denmark since 1968 and in Greenland since 1972. The last population census for both areas was taken in 1970.

Reliability of data and problems of definition

Since the mid-19th century, fairly accurate data have been accumulated on the population of Greenland. Settlements were small, and members of the community were well-known to each other. Very few were likely to escape registration or be entered more than once on the census lists.

Ethnicity, however, has presented a difficult problem of definition in population statistics for Greenland for many years. Until World War II, attempts had been made to distinguish between "Europeans" and the rest of the population who were composed of "pure Eskimos" or "cross-breeds" (persons with both European and Eskimo blood). The latter group, however, had grown rapidly in the past two hundred years and today "pure Eskimos" are a rarity. The 1945 census made a distinction between "persons under Danish law" and "persons under the law of Greenland". Since 1950, however, "birthplace" has become a prominent ethnic distinction so that "persons born outside Greenland" were likely to be considered in the same category as former "Europeans" or "persons under Danish law".

Unfortunately, no published official statistics are available on consensual unions and illegitimacy prior to 1948. To define them and to acquire data on these issues are problems faced by the present materialistic welfare societies of Greenland and Denmark. Much of the uncertainty on current population projections, and a number of complicated problems involving public budgeting and administration control, are due to imperfect knowledge of these badly-defined, though

commonly socially-exposed, groups. Other problems in definition concern occupation and professional status, and position in the family and household.

METHODOLOGY

The standard types of highly reliable and detailed demographic statistics which characterize a modern and highly-developed society are currently being produced in Denmark and Greenland. With the increased use of modern electronic technology and the availability of computerized population registers, data processing is expected to improve greatly.

It may be said that a population projection describes the development of a given population over time in terms of changes in age distribution and rate of growth when a specific initial age distribution is subject to the forces of fertility, mortality, and migration. In application to sub-groups, the population projections may apply to form of marriage, economic activity, health, occupational and social mobility, etc.

The increased use of technical aids for the statistical compilation of population data, and a general demand for increased efficiency in the management of public investments, however, has placed greater emphasis on various types of realistic population projections for public planning and administration. As far as the projection models and the analysis of the demographic components are concerned, these demands will have to be met in the field of fundamental demographic research.

The development of increasingly detailed and realistic population models and the refining and adapting of existing ones for other applications, including the formulating of premises for projections, are clearly activities within the field of demography. The demand for still more detailed population statistics for planning and for fundamental demographic research has placed a new emphasis on the problem of small numbers, not only with regard to Greenland, but also to Denmark (total population at January 1, 1974, 5,036,184).

At present, social statistical distributions reflect unknown elements of randomness. For this reason, these statistics are vulnerable when related to small numbers, although they may not be subject to rational probabilistic evaluation. In other words, the historical time series required for detailed contemporary population projections

could never be fully ascertained by social research. These population projections, therefore, have to be based on presuppositions which have a degree of uncertainty due to limited historical experience, and a certain lack of imagination with regard to future development of the relevant time series, for the use of postulated and hypothesized social statistical distributions should conform to existing relevant knowledge and experience.

There is no doubt that smallness of numbers has an effect on demographic data collection. The input requirements of modern planning and population models may be found to be too detailed and specific, and may raise too many problems to justify the trouble and expense involved for their inclusion in the system of current registration of the total population. For economical administrative purposes, sampling of the relevant statistics appears to be the only realistic way to meet the growing demand for information required for advanced projections and forecasts. In this situation, therefore, methods of applying analytic graduation of the sampled distribution may become increasingly important.

CONCLUSION

Mention should be made of two examples of models which the writer found to be relevant and particularly useful for demographic analysis and projection in Greenland and Denmark. A. Rogers (1975) has discussed methods for constructing multiregional incre-decrement tables and the related applications for projection and estimation of stable equilibria. For experimental use and in teaching, the writer constructed a computer programme based on these methods. So far, this model has been applied to bi-regional demographic analysis and projections of the populations of Greenland-Denmark; the Faroe Islands-Denmark; and Danish regions at the county level. Efforts to adapt the model for general purposes of analysis and projection of a closed population by sex, age, and marital status (quadri-regional version) and for manpower projections (bi-regional version) are in progress at present.

Rogers' model(s) and methods represent a welcome and highly useful, though data-consuming, extension of single-regional demography to multi-regional environments. An example of analytic graduation may be observed from the results of experimental applications of a fertility function by Coale and Trussell (1974). Although difficult to identify as a model of fertility, these applications have produced remarkably close analytic

approximations to empirical schedules of over-all fertility (i.e. all females) and non-marital fertility (Table IV and Figs. 1 and 2). More attention needs now to be paid to the techniques and analytical methods in the field of historical demography, particularly when dealing with problems such as data compilation and statistical analyses of small populations.

REFERENCES

COALE, A.J. and TRUSSELL, T.J. 1974. Model fertility schedules: variations in the age structure of child-bearing in human populations. Population Index, 40 (2): 185-258.

ROGERS, A. 1975. Introduction to Multi-regional Mathematical Demography. New York: John Wiley.

TABLE IV

Mean (u), standard deviation (s), slope (a), and normalized sums of squared differences (SSD) between empirical fertility schedules and the graduated curves.*

Greenland - 1946-74

Period	graduated fertility			empirical fertility			
	μ	s	α	u	s	α	SSD.10^{-5}
All females							
1946-51	30,52	7,0009	0,2864	30,86	7,0306	0,2053	1,61
1952-55	29,91	6,9708	0,2821	29,93	7,1003	0,2795	1,95
1956-60	29,55	6,9808	0,2977	29,56	7,0433	0,3051	0,16
1961-65	28,88	6,9987	0,3471	28,85	6,7761	0,3029	1,29
1966-70	27,86	6,4285	0,3196	27,87	6,4534	0,3210	0,09
1971-74	26,50	6,3585	0,4710	26,82	6,5646	0,4791	1,18
Unmarried females							
1952-55	29,66	6,9723	0,3028	29,63	7,0800	0,3140	1,62
1956-60	28,88	6,9987	0,3471	28,90	6,8979	0,3439	1,75
1961-65	27,77	6,8843	0,4331	27,85	6,9601	0,4259	3,18
1966-70	26,76	6,6638	0,5294	26,84	6,5361	0,5150	1,32
1971-74	26,50	6,3585	0,4710	26,40	6,3225	0,5273	8.13

* The graduation of the empirical fertility schedules by five year age-groups has been performed by A.J. Coale's fertility function (cf. the literary references). The slope of fertility is defined $\alpha = f_{15,19}/f_{20,24}$. The sums of squared differences are defined $SSD = \sum_{(X)} (\tilde{f}_x - f_x)^2$ where $\tilde{f}_x$ and f_x denotes the theoretical and empirical fertility schedules respectively, SSD is normalized in the sense that the areas under the curves (i.e. the total rates of fertility) are equal to 1.

Fig. 1. Empirical and graduated fertility curves, extra-marital fertility in Greenland 1952-1974.

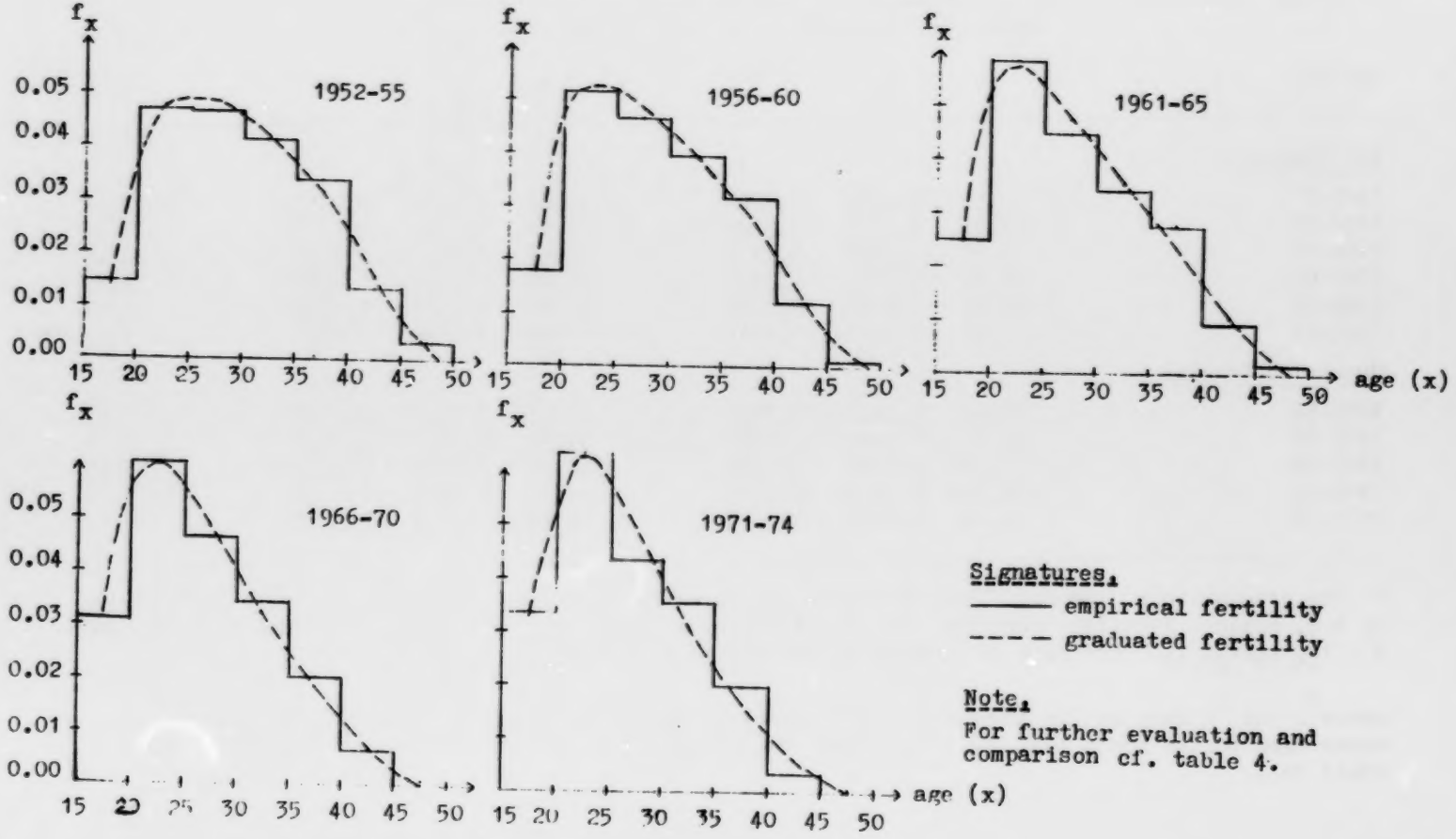
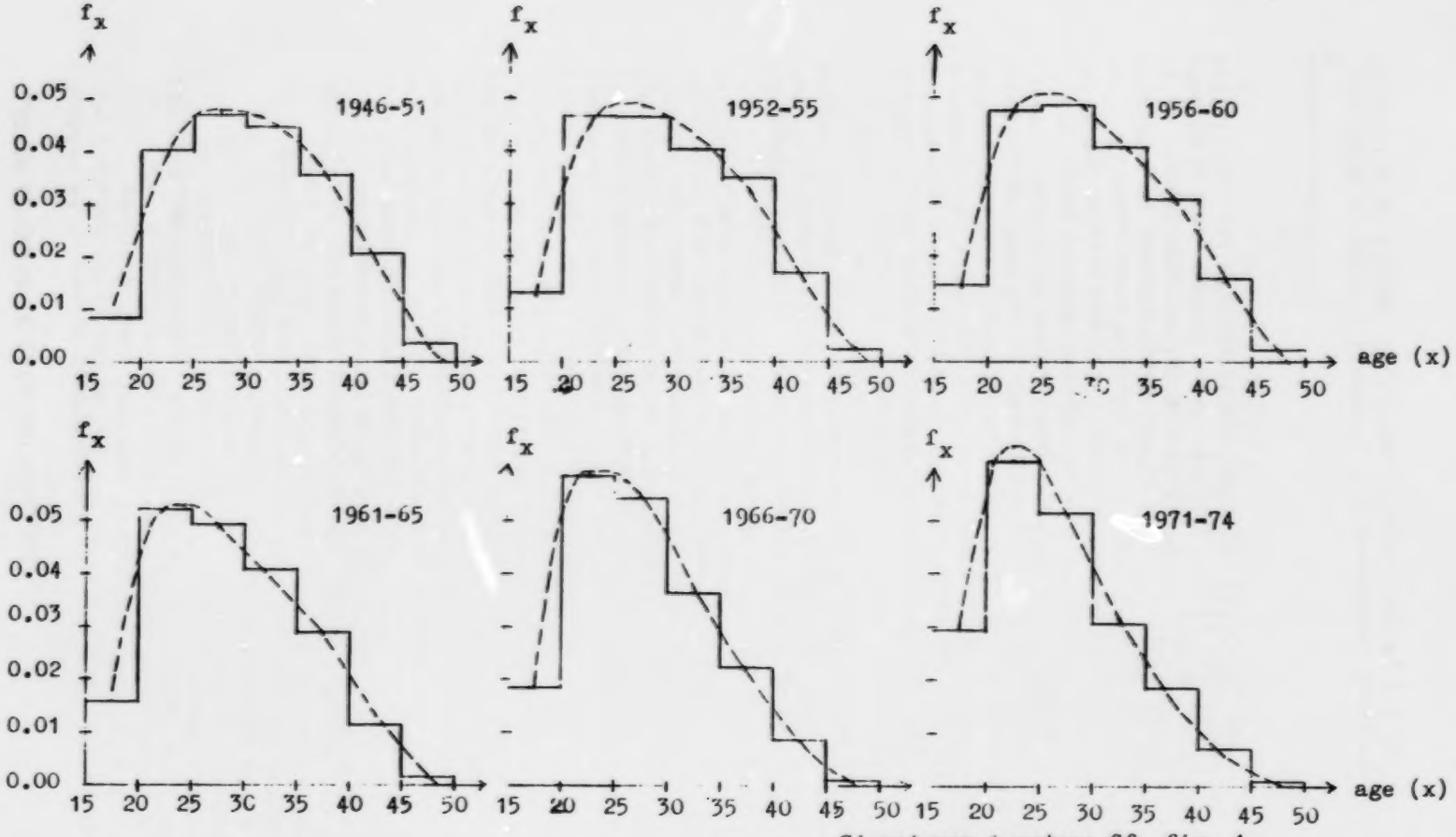


Fig. 2. Empirical and graduated fertility curves, all females, Greenland 1946-1974.



Signatures & notes: Cf. fig. 1.

ALASKAN DEMOGRAPHIC DATA AND RESEARCH

Données et recherche démographique sur l'Alaska

DANIEL A. SEIVER[1]

ABSTRACT. - This paper discusses the various types of Alaskan demographic data, including published and unpublished materials. Census and vital statistics data are presented in detail, together with a selective review of Alaskan demographic research and a discussion of the writer's experience (and that of others) in the use of Alaskan data. Analysing some of the data problems created by rapid population growth, intrastate migration, seasonal mobility, ethnic definition and blood mixing, small populations and other related phenomena, it also presents a few policy recommendations that would improve both the quality and quantity of demographic data available. The probability of implementation of these recommendations is also discussed. Recommendations which are of particular relevance to northern Canada are emphasized.

Throughout the paper, special emphasis is placed on the collection, interpretation, and quality of demographic data relating to Alaska's Native population.

RESUME. - Cet exposé contient une discussion sur les différentes sortes de donnés démographiques sur l'Alaska, y compris des matériaux publiés et non publiés. Des données de statistiques de recencement et de vie sont exposées en détails, en même temps qu'un compte-rendu sélectif sur la recherche démographique sur l'Alaska et une discussion sur l'expérience de l'auteur (et celle des autres) quant à l'utilisation des données sur l'Alaska. Parallèlement à une analyse de certains problèmes de données créés par le rapide accroissement de la population, par les migrations à l'intérieur même de l'Etat, par la mobilité saisonnière, par la définitions des ethnies et des mélanges sanguins, par

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les petites population et par les autres phénomènes qui s'y relient, cet exposé contient aussi quelques recommandations quant à une politique destinée à améliorer aussi bien la qualité que la quantité des données démographiques à notre disposition. Vient ensuite une discussion sur la probabilité de la mise en application de ces recommandations. Les recommendations qui sont d'une importance particulière pour le Canada du Nord sont soulignées. Tout au long de cet exposé l'auteur insiste spécialement sur la collection, l'interprétation et la qualité des données qui se rapportent à la population indigène de l'Alaska.

INTRODUCTION

Almost any demographic research done in Alaska breaks new ground. This phenomenon has two major causes: a dearth of Alaskan demographers, and a dearth of Alaskan demographic data. In the sections immediately following, the data that does exist will be summarised. This "quantity" review is followed by a "quality" review, which includes special Alaskan data problems, some of which may be applicable in northern Canada. Later sections selectively summarise how the writer and others have used the data, and how the data have affected their conclusions. Finally, some tentative recommendations are presented for improving the quantity and quality of Alaskan demographic data.

Available data

The 1970 U.S. Census of Population is by far the richest source of demographic data for Alaska. On a statewide basis, a vast amount of material is contained in these four published volumes on Alaska. There are extensive tabulations and cross-tabulations of such demographic attributes as age, race, sex, marital status, and mobility, and of sociodemographic characteristics such as education, occupation, income, etc. Much of the data are divided into urban and rural components.

Much less published data are availabe on a "Census Division"[1] basis. This is partly due to the small size of Alaska's population which, in some cross-tabulations, reduces cell frequences below acceptable levels.

Some additional Alaskan Census data have been published since the major volumes , including a special report on Alaska's Native population. This report presents for the first time the 1970 age-sex distribution for the total Native population and for each sub-group: Eskimos, Indians, and Aleuts. These basic tables cannot be calculated from previously published Census data. Several tables in this Special Report contain more geographic detail and also some sociodemographic characteristics of Alaska's Native population.

Other Census data are available to researchers on magnetic tapes. Some of these data (the so-called first-, second-, third-, and fourth-count tapes) contain demographic data in extensive (enumeration district) geographic detail. For example, it is possible to print out age-sex distributions for communities as small as 50 individuals. Unfortunately, the data are stored in tab ular form (to prevent disclosure), eliminating any possible flexibility in data manipulation. Public Use Samples (1970) magnetic tapes are available for Alaska. Although the largest (one per cent) sample would include only 3,000 Alaskams, it is possible to combine four theoretically mutually exclusive one per cent samples, increasing sample size to approximately 12,000 records. It is possible to generate many of the interesting and important cross-tabulations omitted by the Census, but sample size dampens the spirits of even the most zealous cross-tabulator.

A much smaller quantity of data is available for the 1960 U.S. Census of Alaska (as with other states) and there are no magnetic tape tabulations. The one Public Use Sample is so small (2,000 records) as to be quite useless. It was also unfortunate that no Special Report on Alaska Natives was issued after the 1960 Census.

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[1] Alaska is divided into 29 Census divisions (1970) which correspondent to counties in other U.S. states. The 1970 delineations have since been altered by the state.

The 1960 U.S. Census contains only fragmentary data on Alaska, since Alaska was only a territory at the time, and except for the simplest kinds of analyses, the data are not very useful.

Vital statistics data for Alaska are, of course, collected by the U.S. in cooperation with the State of Alaska. These data consist of births and deaths by race (white, Negro, other) by month (published by U.S. Vital Statistics Division). The same data classified by age are published by the same division but with a time lag of up to five years. Births by detailed race (white, Negro, Native, other) by year are available in unpublished form from the Alaska Vital Statistics Divsion. For the year 1970, these data are reported by age and region of the State. A breakdown by Native race (Eskimo, Indian, Aleut) is not available at present, but could probably be tabulated from existing files of registration records.

Annual estimates of population are made by the U.S. Census Bureau, by the State for census divisions, and by the State as a whole, for both the resident and civilian population (active military personnel comprised over 10 per cent of the population in 1970). These population estimates are not reported by race, although the State has, on occasion, made estimates of the Native population.

A number of Special Censuses have been conducted in the State by the Census Bureau, but these provide very limited information on isolated areas. The usefulness and feasibility of Special Censuses are discussed in a later section.

In sum, there is not a great deal of demographic data available for Alaska and especially for its Native population, even in comparison with population data for the Canadian North, and remedies could be quite expensive.

Data Problems

What little demographic data available are flawed in many respects, and a detailed discussion of the problems involved follows.

Rapid population growth has been occurring in Alaska as a direct result of the construction of the trans-Alaska oil pipeline and the ensuing massive interstate

migration. However, these growth figures tend to "age" when the major source of population growth is interstate migration, making even annual estimates of Alaska's population quite difficult. It is known that the demographic characteristics of migrants differ from those available on the resident population in 1970.

The United States Census Bureau, for instance, estimates Alaska's 1975 population to be 351,000. The Department of Labor of the State of Alaska, the state agency responsible for population estimation, has set the 1975 population at 404,000. The calculation of net migration to the State is responsible for the entire difference. The Census Bureau uses a variety of accepted methods to estimate net migration, including Component Method II, Ratio-Correlation, and Administrative Records. Unfortunately, all these methods are subject to error when used to calculate net migration of young, single individuals. The State, on the other hand, adjusts its estimates by labour force data, but their technique is rather informal. Table I presents the "boxscore" for population estimates for 1974-75.

TABLE I.- ALASKA'S POPULATION

	July 1 1973	July 1 1974	July 1 1975
Census Bureau	331,000	338,000	351,000
State	331,000	351,000	404,000
Births-Deaths		5,100	5,700
Census-Implied Net Migration		1,900	7,300
State-Implied Net Migration		14,900	47,300
Growth in Employment		17,000	30,000

An examination of implied net migration shows enormous differences between the State and the Census Bureau. Estimated growth in employment is included for comparison purposes. These irreconcilable differences at the statewide level appear, of course, at the census division level

also. The relative geographic distribution of the State's population is changing, but the degree of change depends greatly on the amount of interstate migration. The age-sex distribution of the State's population is also changing as a result of this migration, but again it is not possible to determine the amount of change.

The data problemscreated by rapid population growth are quite severe but apply mainly to the State's white population.[2] The Native population is quite mobile, but this mobility is essentially intrastate or geographic[3] and accounts for many of the weaknesses of demographic data on Natives. Not only are many villages small enough to disappear from sight from time to time, but also many village sites are completely abandoned for long periods while new villages are created. There have also been omissions, name confusions, and definition confusions.[4] In addition, the Census is conducted on April 1, and does not take into account the important seasonal rhythms in population movements in Alaska.

Two particular examples are illustrative of the problems encountered. In one instance, the Census enumerators of 1970 overlooked the village of Napaskiak, and enumerated the nearby village of Nepakiak instead. In the second, the large "floating" Native population of the city of Anchorage, which could not be identified by recourse to mailing lists, telephone books, etc. was,

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[2] ISER has so far focussed on the white population in its Man-in-the-Arctic Program. We have built a population model which is explicitly driven by an economic model of the State, enabling us to project population impacts of resource development and pipeline construction in the State.

[3] Seiver, D and Fison, 1975. Alaskan Population Growth and Movements, 1960-1973. Anchorage Alaska: Institute of Social, Economic and Government Research.

[4] Alonso, W. and Rust, E. 1976. The evolving pattern of village Alaska. Unpublished manuscript prepared for Federal State Land Use Planning Commission, March 1976, for a detailed discussion of rural Native population movements.

according to Rogers[5], under-enumerated in 1970. The Census Bureau did, however, alter its initial count of Anchorage by 48, to partly reflect this phenomenon.

Cultural differences account for many of the shortcomings of census data on Natives and it is possible that Native input during census-taking could solve some of the problems. But there is, in addition, the problem of self-enumeration, which is also important. The proper ethnic definition of an Alaskan Native is difficult to determine. The Alaska Native Claims Settlement Act defines a Native as any individual who has at least one-quarter Native blood. The 1960 Census used enumerator identification and the 1970 Census used self-identification. All three no doubt provide different results. In addition, answers to self-identification questions change over time.

In sum, the quality of Alaskan demographic data is not high. However, despite limited quantity and low quality, it is still necessary and possible to carry out demographic research.

Demographic Research in Alaska

In preparation for this Workshop, the writer made estimates of age-and sex-specific vital rates for Alaska's Native population in 1970 (see Table II). These rates had never been calculated before, for the variety of reasons noted above.

These vital rates are quite high, compared to vital rates for white Alaskans which, in their turn, are much higher than average U.S. rates, although it is known that Native vital rates fell sharply between 1960 and 1970. The crude birth rate, as far as can be ascertained, has remained about the same since 1970. At the same time, it is quite likely that the Native population is under-enumerated for the reasons noted above which could also account for the upward bias in these rates, which no doubt vary by Native race and by region but, as pointed out in the section Available Data, vital statistics and census data do not supply the required detail for these calculations. Fertility ratios (0-4 children per thousand women 15-44) can be calculated, and these

[5]Rogers, G.W. 1971. Alaska Native Population Trends and Vital Statistics, 1950-1985. Anchorage, Alaska: Institute of Social, Economics and Government Research.

TABLE II. - AGE-SEX SPECIFIC
VITAL RATES FOR ALASKA NATIVES
1970

Birth Rates (1,000)	
Age	
0-4	--
5-9	--
10-14	--
15-19	99.0
20-24	288.8
25-29	250.6
30-34	136.4
35-39	93.6
40-44	36.0
45-49	--
50-54	--
55-59	--
60-64	--
65 +	

Death Rates (1,000)		
Age	Male	Female
0-4	8.7	10.3
5-9	1.2	1.3
10-14	0.8	0.3
15-24	7.4	1.9
25-34	6.4	4.3
35-44	6.9	8.1
45-54	16.3	11.4
55-64	26.4	13.3
65 +	45.9	50.1

show Eskimo fertility to be much higher than Indian, which is, in its turn, much higher than Aleut. Yet there is no data on differential infant mortality available which could affect that comparison.

The discussion above summarises about 10 per cent of the serious demographic research done on Alaska Natives to date[6]. Much of the remainder has been done by George Rogers, who attempted to estimate and project Native population by region of the State, an heroic undertaking, given the quality of the data.[7] Much of Rogers' work centres on discussion and attempted measurement of Census inconsistencies and oversights in counting the Native population, all of which have been discussed above. His regional projections highlight the lack of data and

[6] I am excluding village level anthropological studies which are highly episodic.

[7] Rogers, G.W. 1971, op. cit.

research on Native mobility; he is forced to assume scenarios of "no migration" and "same migration pattern" for projection purposes.

Rogers also calculates a time-series of birth and death rates for Alaska Natives by region, but these estimates are flawed by incorrect residence reporting of Natives. The numbers do show, however, a dramatic decline in the birth rate in Northwest Alaska, an essentially Eskimo region. How and why public health-birth control information campaigns were so successful so rapidly in these areas has yet to be studied, yet research on this phenomenon could influence important policy decisions on population growth in developing nations and give an understanding of so-called demographic transition.

Other research on Alaska Natives[8] has shown another trend in Native mobility, mainly interstate and perhaps international out-migration. The magnitude of these migrations can only be surmised at, as the data are too weak to support detailed analysis.

As noted, the Institute of Social and Economic Research (ISER) has concentrated its demographic research under the Man-in-the-Arctic (MAP) Program on the white population of Alaska which comprises about 80 per cent of the total population. The model created is discussed in detail elsewhere[9] and will only be summarised here.

Combining 1970 Census and vital statistics data, it was possible to estimate fertility and mortality schedules for Alaska's white population and calculate the age-sex distribution for 1970. The only additional information necessary to project age-sex distribution into the future was net migration data. The ISER/MAP econometric model of the State projected employment growth and income figures for Alaska which were functionally related to net migration. The projected net migration in each year was then allocated to the age-sex categories of the population model. It then

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[8] Seiver, D. and Fison. 1975., op. cit.

[9] Seiver, D. A. 1975. Alaskan Economic Growth: A Regional Model with Induced Migration. Paper presented at 1975 Annual Meeting of the Regional Science Association, Cambridge, Massachusetts.

became possible to project the demographic impacts of various types of resource developments in Alaska. The ISER/MAP economic-demographic models were an example of the research that could be done despite severe data constraints.

A Proposed Special Census

Alaska was presented with the opportunity of having a special Census of the entire State performed in the summer of 1976, by the U.S. Census Bureau, to be supervised by demographers and state officials. For less than $1 million (for the fiscal year 1977, State spending will exceed $700 million), age-sex (detailed)-race counts by enumeration district would have been provided and, in addition, a cross-tabulating of answers to a "length of residence" question designed to isolate pipeline-construction-induced migration to the State. Since the State would pay for this Census, it would have the right to oversee selection of enumerators and other staff, provide all up-to-date maps on which the enumeration would be based and, in general, eliminate the data problems underlying the 1970 Census conducted and paid for by the Federal Government.

The Governor of Alaska and his advisers supported the principle of a Special Census, but the legislature did not. No census was taken. More frequent censuses, with some control by knowledgeable local individuals, to pinpoint village changes, family mobility, etc., could be useful in improving the quality and quantity of demographic data available on northern Canada as well. If a census could be conducted during a construction boom created by a gas or oil pipeline, additional crucial data on white migration patterns would also be obtained.

Conclusion

The collection and publication of vital statistics in Alaska need to be greatly expanded. One unpublished data point every ten years is hardly sufficient,[10] particularly when this data point does not provide a detailed racial breakdown, even though it is known that vital rates differ between Eskimos, Indians and Aleuts. Consequently, little research on Native vital

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[10] The U.S. Legislature is now considering the possibility of Censuses every five years.

rates has been done. Unfortunately, there is no organized group to demand improvements in the collection and dissemination of vital statistics, so the status quo is almost guaranteed.

Vital statistics data for northern Canada appear to be superior to those for Alaska[11], and the progress of demographic transition among Canadian Indians is well-documented by comparison. For example, it is not possible to determine whether the problem of late registration even exists in Alaska. A register of Natives does not exist, although a record of the "stockholders" of Native corporations has been inaugurated.[12] This record, unfortunately, contains only names and addresses, and is not generally available. The only recommendation to be made here is that, for the 1980 Census, vital statistics for the year be reported in more detail. It would then be possible to gauge the extent of the demographic transition that appears to be under way among Alaskan Natives.

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[11] Piche, V. and George, M.V. 1973. Estimates of vital rates for the Canadian Indians. Demography, August 1973.

[12] These records are a direct result of implementation of the Alaska Native Claims Settlement Act.

LA DEMOGRAPHIE DES INUIT DU NOUVEAU-QUEBEC: UNE GRANDE INCONNUE

Demography of the Inuit in New Quebec: A Great Unknown

LOUISE NORMANDEAU[1]

RESUME. - Si depuis quelques années, on connait un peu mieux la population des Territoires-du-Nord-Ouest grâce à des études et des recherches de plus en plus nombreuses, il n'en va pas de même pour celle du Nouveau-Québec. Or, de nombreux organismes gouvernementaux ou para-gouvernementaux auraient sûrement avantage à mieux la connaître.

Malheureusement, les données déjà existantes sont des plus lacunaires: les recensements ne nous apportent des renseignements que très peu valables, les faits d'état civil sont à peine compilés. Bref, les sources généralement employées pour analyser une situation démographique ne nous aident guère dans le cas du Nouveau-Québec.

Pour parer ces difficultés, Jacques Légaré, professeur au département de démographie de l'Université de Montréal, a mis sur pied un fichier permanent de population inuk. Ce fichier ne fonctionne jusqu'à présent qu'à partir de données officielles à savoir les enregistrements à l'état civil. Malheureusement, dû à l'éloignement et au manque de communications, cet enregistrement est loin d'être parfait. Il faut alors combler ces lacunes. Mais comment?

Une première tentative de récupération a été amorcée en mettant sur pied ce que nous avons baptisée "Une campagne d'officialisation". Il s'agit à vrai dire d'une enquête menée sur le terrain pour connaître et surtout faire officialiser les naissances, adoptions, décès, etc. qui se sont produits au Nouveau-Québec.

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[1] Département de démographie, Université de Montréal, Montréal, Québec

Bien que cette "campagne" comble plusiers lacunes, elle ne guérit pas le mal. Tant qu'il y aura un fort sous-enregistrement, notre fichier ne saura être le reflet de la réalité. C'est donc au problème de sous-enregistrement même qu'il faut s'attaquer en pensant aux divers moyens qui peuvent être mis en branle pour l'enrayer au moins en majeure partie.

ABSTRACT. - Although in the past few years, more knowledge has been acquired of the population of the Northwest Territories, thanks to the many studies by researchers in that area, the same does not apply in New Quebec. Census figures have been found to be of little value, and government records are badly compiled. In effect, the general sources available to analyse the demographic situation in New Quebec are practically non-existent.

To offset these difficulties, Professor Légaré established a permanent population register for the Inuit of Quebec, based until recently only on official records. However, due to distance and lack of communication, the registration methods have been found to be far from perfect. A tentative step has been taken to fill the gaps and to salve the situation, and an "official registration campaign" has begun. This is, in effect, a survey carried out within the territory to discover and register births, adoptions, deaths, etc., in New Quebec.

Although this new campaign has filled several gaps, it has not solved the problem. In fact, until the problem of under-enumeration has been solved, the permanent population register can be but a reflection of the quality of the data.

De tous les Inuit qui peuplent le Nord du Canada, environ 25% habitent ce qui est usuellement appelé "le Nouveau-Québec" , partie de la province de Québec située au nord du 55e parallèle (Voir carte)

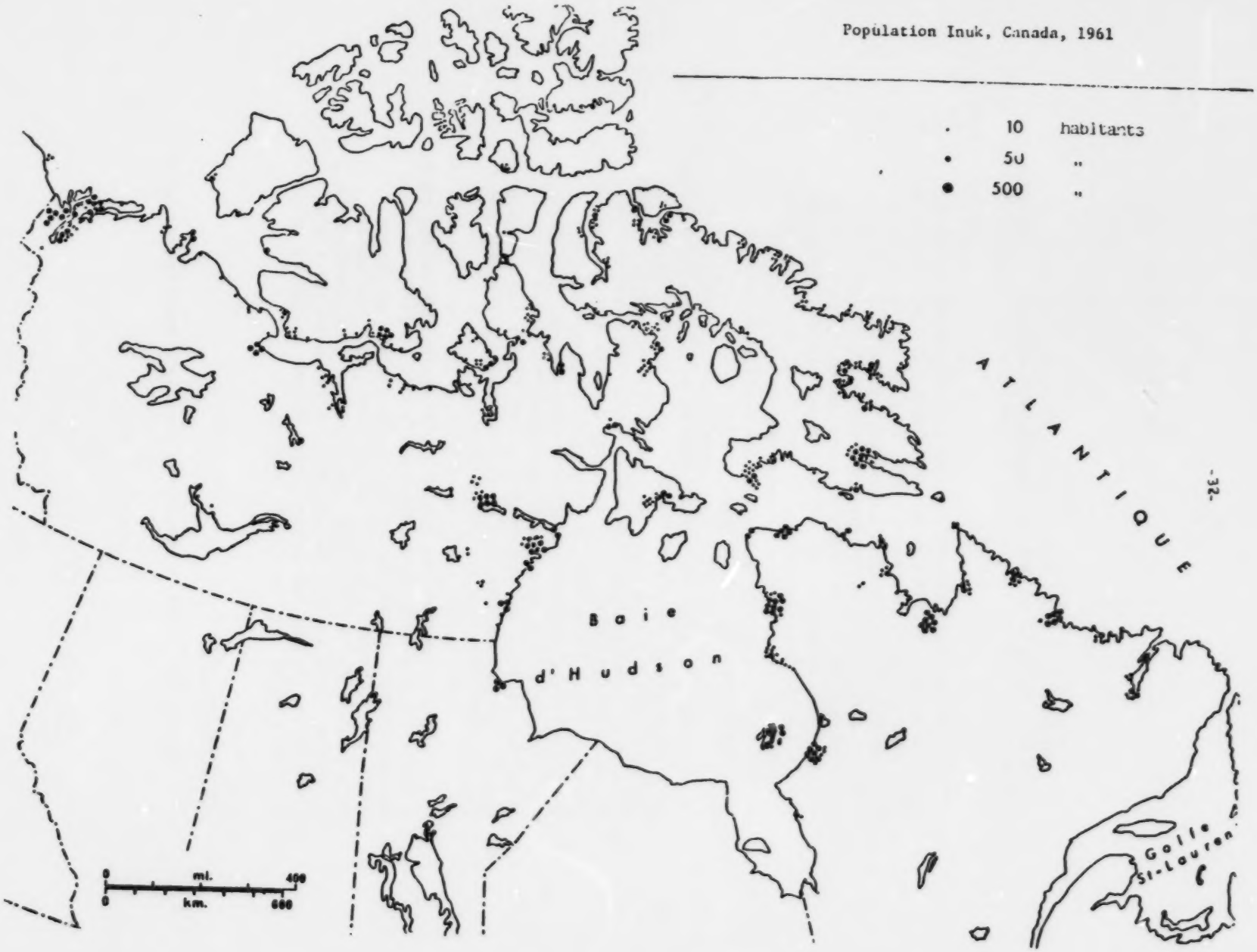
Si depuis quelques années, on connaît un peu mieux la population des Territoires du Nord-Quest, il n'en va pas de même pour celle du Nouveau-Québec. Et pourtant le sujet est d'actualité. Pour plusieurs, les Esquimaux sont longtemps apparus comme des personnages de légendes mais depuis que le gouvernement ou des entreprises para-gouvernementales ont entrepris le développement de la prospective des ressources naturelles du Nouveau-Québec, les habitants de ce vaste territoire sont soudainement devenus réalité. Ce n'est que depuis quelques années aussi que les Inuit eux-mêmes ont pris conscience de leur spécificité.

Il devient urgent pour eux tous de mieux connaître cette population. Pour le gouvernement il est important de connaitre l'autre partie pour son octroi d'allocations (allocations familiales, pensions de vieillesse, etc.). Les entreprises doivent pouvoir faire des prévisions de main d'oeuvre et pour ce, mieux connaître le population déjà sur place. Finalement, les Inuit doivent avoir une idée de leur force pour appuyer leurs revendications. Bref, il serait dans l'intérêt à tous que des études soient faites sur ce monde qui est à vivre un tournant de son histoire tant démographique que sociale.

Malheureusement, des études sérieuses de population sont à toute fin pratique impossibles en ce qui concerne le Nouveau-Québec. La raison en est toute simple: un manque flagrant de données fiables. Actuellement pour quelqu'un qui voudrait faire une étude démographique du Nouveau-Québec, il existe trois sources de données: le recensement, l'état civil et les listes administratives. Voyons un peu la valeur et l'utilité de chacune de ces sources:

Les recensements

Depuis 1931, les recensements canadiens nous fournissent


Population Inuk, Canada, 1961
10 habitants
50 "
500 "
ATLANTIQUE
Baie
d'Hudson
Golfe
St-Laurent
0 mi. 400
0 km. 660

des données concernant les Inuit sous la rubrique: Origine ethnique. On peut ainsi avoir des données par sexe et groupe quinquennal d'âges - Malheureusement, le Bureau fédéral de la Statistique n'a publié qu'en 1931 ces résultats. A partir de 1941 les publications du recensement fournissaient les données relatives aux Inuit conjointement avec celles relatives aux Indiens. On peut toutefois, en faisant une demande spéciale, obtenir les tableaux ne touchant que les Inuit.

Quelle valeur ont ces renseignements? Avant d'utiliser les chiffres, il convient de se poser cette question. Le fait que les questionnaires ne soient pas remplis par des agents recenseurs auprès des individus mais livrés à une seule personne qui répond au meilleur de sa connaissance pour toute la communauté nous laisse sceptique sur la valeur de ces informations. Pour pouvoir évaluer la qualité des recensements nous avons utilisé le test des générations, c'est-à-dire que nous avons reconstitué des groupes de cinq générations et avons suivi leur évolution à travers la période 1931-1971. La figure no 1 nous démontre qu'il y a visiblement mauvais enregistrement de la population Inuk. Il est en effet impossible qu'en absence d'immigration une génération voit ses effectifs augmenter avec l'âge; au contraire étant donnée une certaine mortalité, ils diminueront. Le problème est encore plus prononcé pour les jeunes générations comme quoi les derniers recensements de 1961 et 1971 ne sont guère meilleurs.

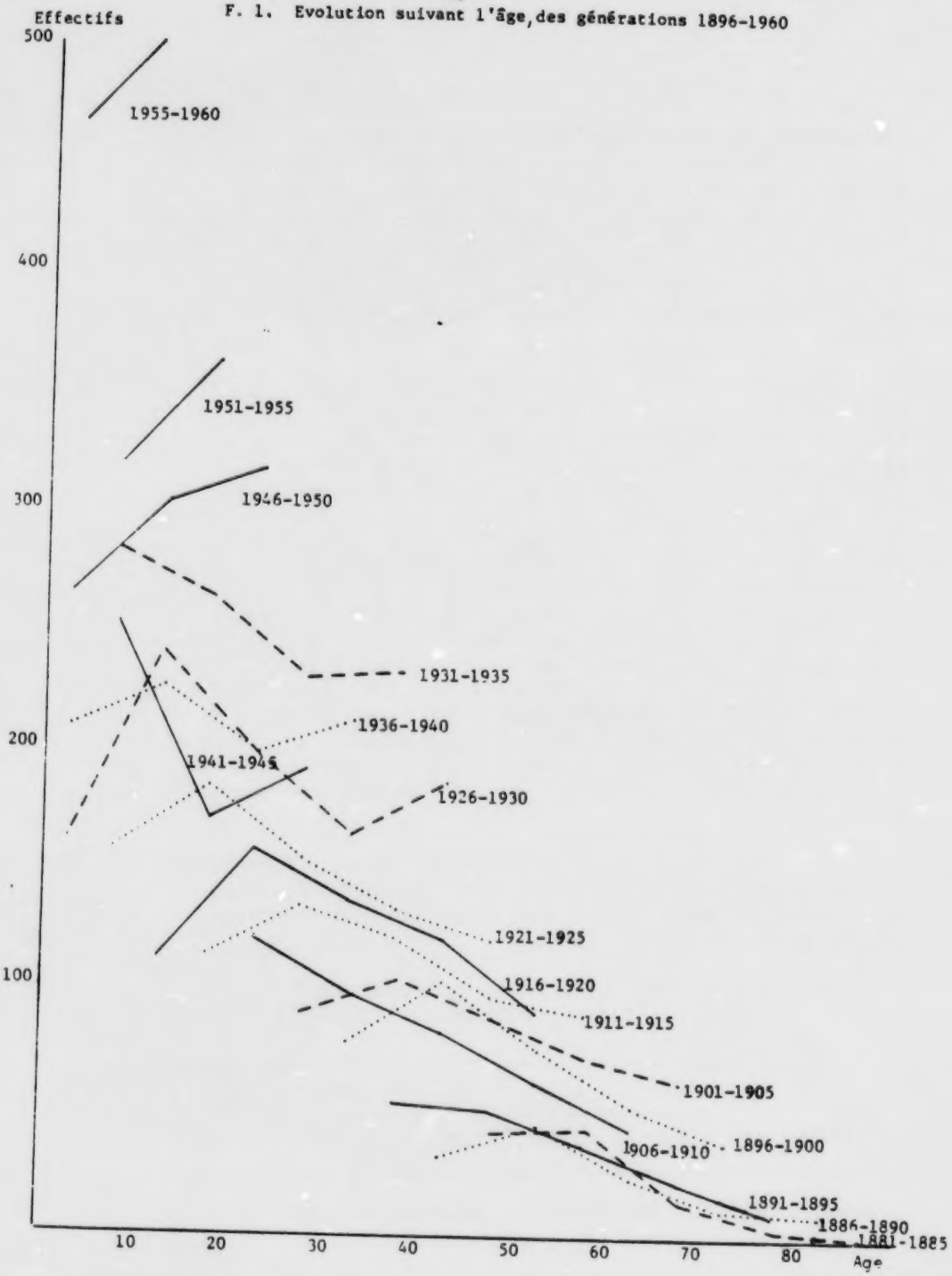
Toutefois, même si les recensements ne nous fournissent pas des données par âge fiables, nous pouvons grâce à eux avoir une idée générale de l'évolution de la population durant la période1931 et 1971.

Tableau 1. Population Inuit du Nouveau-Québec aux divers recensements 1931-1971

Année	1931	1941	1951	1961	1971
Effectifs	1,159	1,778	1,989	2,467	3,755

Source: B.F.S. Recensements, tableaux non publiés

F. 1. Evolution suivant l'âge, des générations 1896-1960



Je dis bien une idée générale puisque là encore la valeur de ces nombres est à mettre en doute. Si on regarde le phénoménal taux d'accroissement entre 1961 et 1971 qui est de 41.4% on ne peut que conclure à un sous-enregistrement flagrant au recensement de 1961.

Ce n'est donc qu'approximativement que nous pouvons dire que la population Inuit a triplé en 40 ans alors que celle de tout le Québec ne faisait que doubler pendant la même période.

Les statistiques de l'état civil

Outre les résultats des recensements, Statistique-Canada publie annuellement des statistiques d'état civil parmi lesquelles nous pouvons trouver des statistiques de naissance et décès par groupe quinquennal d'âges.

Jusqu'en 1952, ces données étaient disponibles pour les Inuit. A partir de cette date, certains gouvernements ayant cessé de demander sur leurs questionnaires l'origine ethnique du nouveau-né ou du décédé, on a cessé la publication de ces statistiques.

Les listes administratives

Pour la plupart des villages du Québec il existe des listes administratives des habitants du village. Ces listes proviennent de deux sources: certaines du Ministère des Affaires Indiennes et du Nord les autres du Ministère des Richesses naturelles - Direction générale du Nouveau-Québec. Malheureusement ces listes ne sont pas établies avec la même régularité sur tout le territoire. D'autre part la valeur même des informations qu'elles renferment est à mettre en cause. Qu'il suffise de donner un exemple: Fort Georges, 6 juin 1965, 11 mai 1966 et 20 décembre 1966; trois listes administratives tout à fait identiques. Aucune personne sensée ne croira qu'en un an et demi il n'y a eu à Fort George aucune naissance, aucun décès, aucune arrivée et aucun départ. Cela pour dire que même si certaines listes nous semblent très bien faites, nous ne pouvons pas pour

l'ensemble du Nouveau-Québec nous fier à cette source de renseignements.

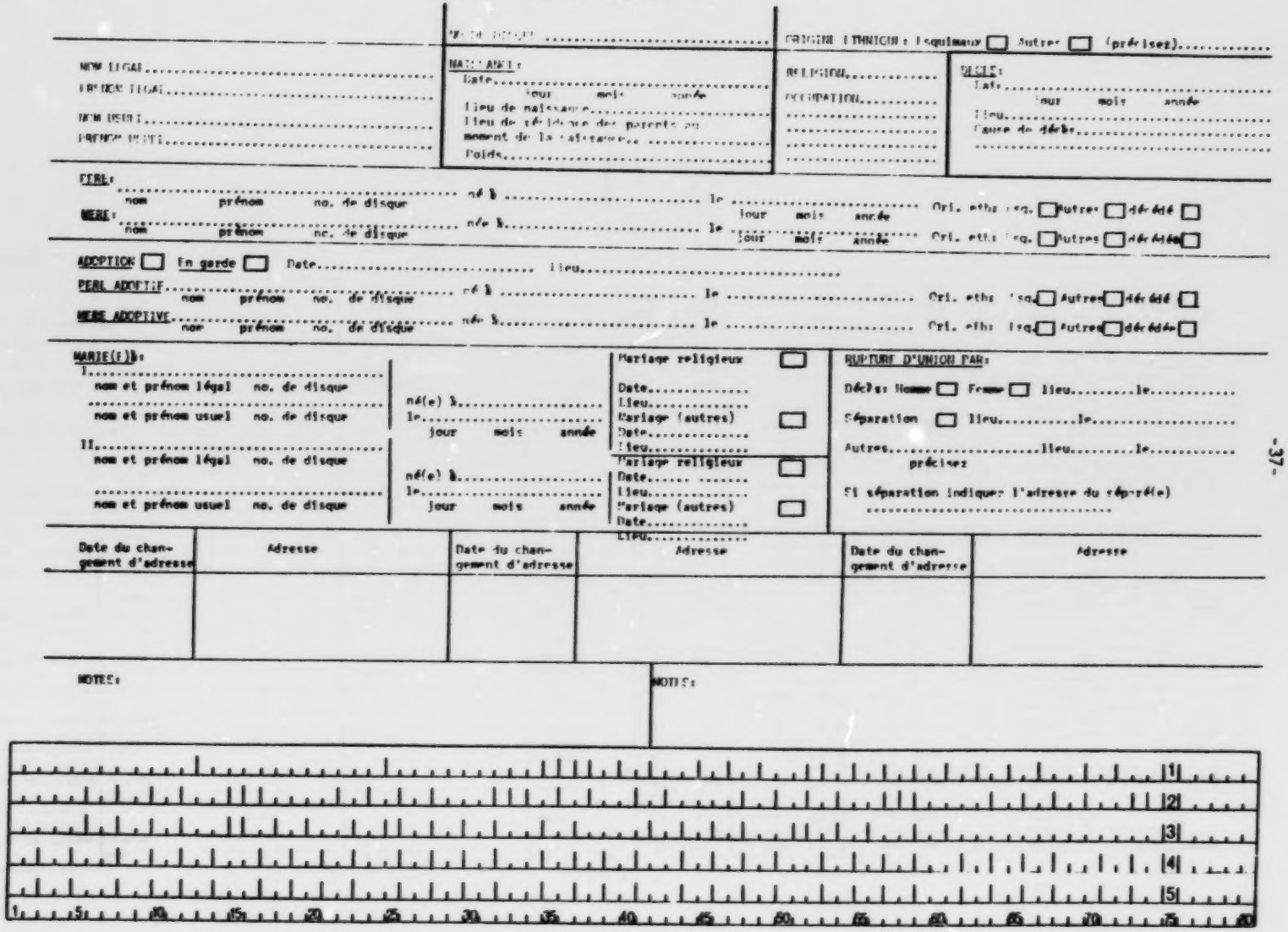
Un fichier de population

C'est donc dire que les sources généralement utilisées pour analyser une situation démographique ne nous aident guère dans le cas du Nouveau-Québec. Devant un tel problème, deux choix se présentent: le premier est de faire des études à partir de modèles, le second est de construire un fichier de population. Le second choix peut sembler plus difficile parce qu'il nécessite une longue période de mise en branle mais à partir du moment où le chercheur est prêt à investir une partie de son temps à cette étape, c'est sûrement la meilleure façon de procéder. C'est là ce qui motiva Jacques Légaré, professeur au département de démographie de l'Université de Montréal lorsqu'il entreprit de mettre sur pied un tel fichier pour la population Inuk du Nouveau-Québec.

Au Québec, même après 1952, le gouvernement a continué à demander sur ses enregistrements de faits d'état civil l'origine ethnique du nouveau-né, des nouveaux-mariés ou du décédé. C'est à partir de ces enregistrements que le fichier fonctionne. Il est très important pour nous que tous les renseignements que notre fichier contient, viennent de sources officielles. Des photocopies de ces actes nous parviennent donc du Ministère des Affaires Sociales - Registre de la Population. Ils sont ensuite dépouillés sur des fiches individuelles telles celle de la figure 2. Une telle fiche a été établie pour tout Inuk dont on a l'acte de naissance ou de décès, pour les parents de cet Inuk qui sont mentionnés sur l'acte de naissance ou décès, pour le conjoint mentionné dans l'acte de décès. A ce jour, le fichier contient un peu plus de 4,750 fiches individuelles. Environ 750 d'entre elles ont été fermées c'est-à-dire qu'elles concernent des personnes déjà décédées.

Dans ce fichier, figure donc la biographie de personnes susceptibles d'avoir vécu sur ce territoire depuis 1926, ce qui permet de faire des analyses historiques des dernières

FIG. 2 Fiche de dépouillement



INFANT

No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	Sexe M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint : I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Autres ☐ Adoption ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint : I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint : I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint : I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint : I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....
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No. de disque	Nom..... Prénom.....	né(e) le..... lieu.....	légitime ☐ hors mariage ☐ adoptif ☐	M ☐ F ☐	Si remariage distinguez les enfants du nouveau conjoint I ☐ II ☐	Départ de la famille par Mariages ☐ Décès ☐ Adoption ☐ Autres ☐ Date.....Lieu.....

Divers:

Divers:

37A

50 années. Au recto de la fiche individuelle, on traite de six événements ou caractéristiques démographiques: 1° la naissance: date et lieu de naissance, lieu de résidence des parents au moment de la naissance, identification des parents 2° le décès: date, lieu et cause de décès. 3° l'adoption: lieu et date de l'adoption, identification des parents adoptifs. 4° le mariage: lieu, date et type de mariage, identification du conjoint, renseignements relatifs à la rupture d'union 5° l'occupation: type et période d'emploi 6° l'adresse: date et lieu des changements d'adresse.

Au verso de la fiche, on trouve des renseignements sur les enfants de l'individu; le nom et le numéro de disque de chaque enfant, le lieu et la date de la naissance, son sexe, la date et le mode de son départ de la cellule familiale.

Théoriquement, il devrait être très aisé de faire des études démographiques (fécondité, mortalité, migrations) à partir de telles fiches puisque tous les renseignements ainsi recueillis sont codés, mis sur cartes perforées et sur bande magnétique. En pratique, tel n'est pas le cas. Tel n'est pas le cas parce que l'enregistrement est loin d'être parfait. De nombreuses raisons peuvent expliquer ce mauvais enregistrement des faits d'état civil: l'éloignement, le manque de communication, le manque de stimulation des intéressés, un effort peu soutenu des autorités en place.

Un premier test nous démontre sans l'ombre d'un doute à quel point le sous-enregistrement est important pour certaines périodes. Voici en quoi il consiste: dans une population fermée, c'est-à-dire sans migration, prise à un moment donné, l'effectif des 0-4 ans révolus devrait correspondre au nombre de naissances des cinq années précédentes diminué du nombre de ces naissances qui n'auront pas survécu jusqu'au recensement. Voici les chiffres pour les Inuit du Nouveau-Québec: nous n'avons pas indiqué sur le tableau les données pour la période 1926-1931 parce que l'enregistrement commençant à peine, les données étaient très mauvaises.

TABLEAU 2

Année	Naissances enregistrées (1)		Population 0-4 ans au recensement (2)	(2) ÷ (1) %
1936	39			
1937	44			
1938	47	201	212	105
1939	29			
1940	42			
1946	84			
1947	82			
1948	101	461	268	58
1949	98			
1950	96			
1956	93			
1957	115			
1958	129	553	466	84
1959	108			
1960	128			
1966	122			
1967	132			
1968	108	551	670	122
1969	74			
1970	115			

Dans une population où l'espérance de vie à la naissance est d'environ 30 ans, la proportion de survivants de la naissance au groupe d'âge 0-4 ans est de 67.5% (1). Nous devrions donc retrouver ce rapport en supposant que la couverture du recensement soit parfaite. Comme ce n'est pas le cas, le rapport calculé devrait être encore plus faible. Les périodes pour lesquelles le rapport est plus élevé, nous montrent immédiatement un sous-enregistrement des naissances. Il faut voir combien il est particulièrement élevé pour la période 1936-40 et pour la période 1966-70.

Pour bien montrer le sous-enregistrement qui existe à l'état civil voici les résultats d'un travail de bénédictin

(1) d'après les tables-type de mortalité de Coale et Demeny, groupe "ouest" niveau 5.

qui consistait à dépouiller tout ce que nous avions comme liste administrative pour retrouver le plus de dates de naissance possible. N'ont échappé à notre étude que les personnes mortes avant 1967 (année de nos plus anciennes listes) et qui ne sont jamais apparu comme sujet ou comme parent d'un sujet dans un acte d'état civil quel qu'il soit.

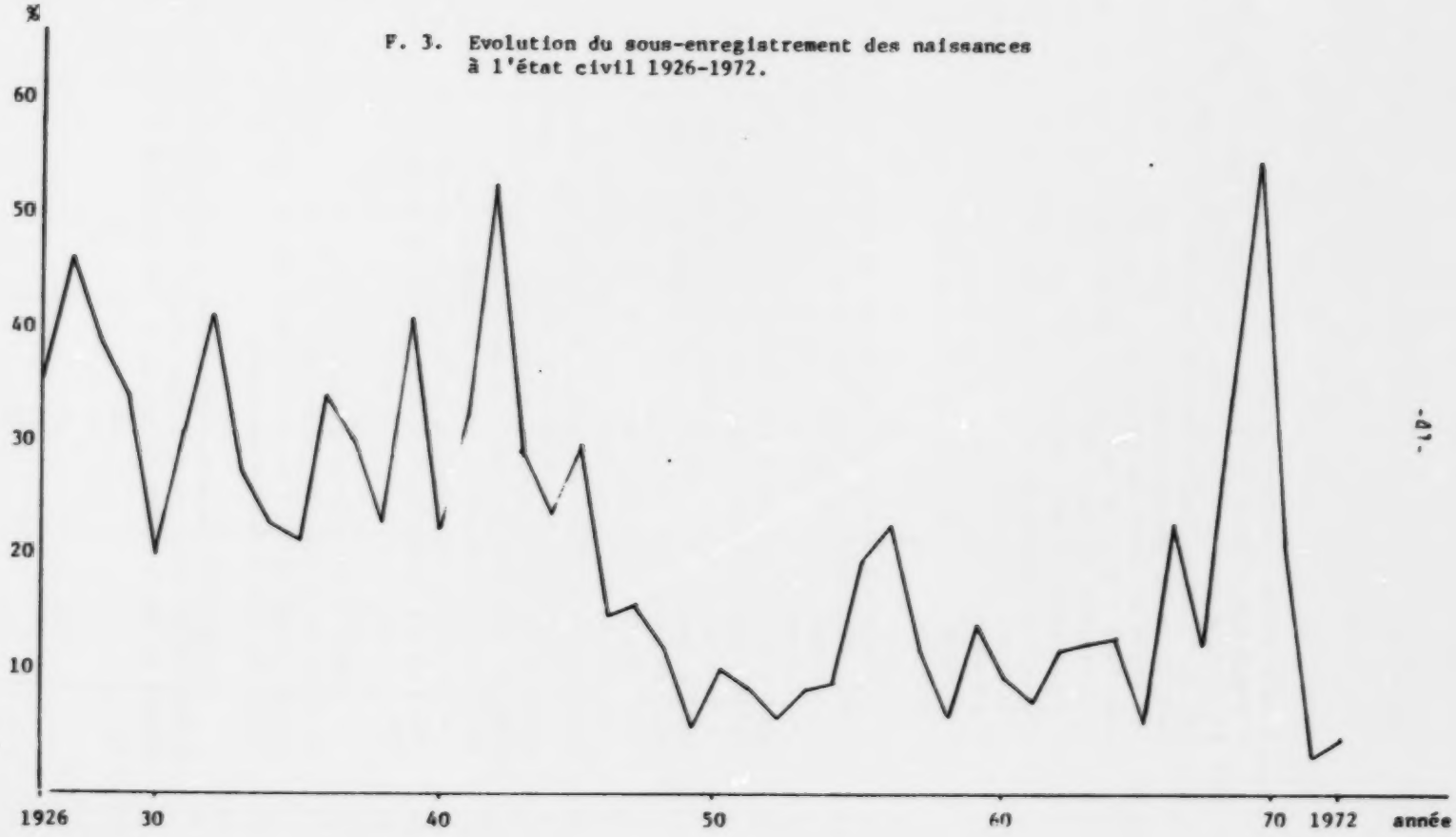
La figure 3 nous montre comment a évolué depuis 1926 le sous-enregistrement des naissances. Etant donné les petits nombres, il ne faut pas s'attarder sur les fluctuations annuelles mais plutôt sur l'allure générale de la courbe. On voit ainsi que ce n'est qu'après la guerre que l'enregistrement s'est amélioré de façon tangible, se maintenant entre 1946 et 1966 à un niveau moyen de 62.5% ce qui est tout de même assez faible. A la fin des annees '60, on assiste à une remontée spectaculaire du sous-enregistrement. Ce phénomène coincide avec une période de chevauchement administratif des gouvernements fédéral et provincial. Il faut croire qu'étant pris par de nombreuses charges administratives, les agents se sont montrés moins vigilants pour l'enregistrement des faits d'état civil. Heureusement les années 1971 et 1972 sont meilleures.

Il est beaucoup plus difficile d'évaluer le sous-enregistrement des décès. Mais pourquoi ne serait-il pas semblable à celui des naissances? Ou même plus grand? De toute façon, il est sûrement très élevé et il faudrait y remédier.

Pour ce qui est des mariages, troisième événement digne d'un acte d' état civil, il ne saurait être question d'en faire une étude pour la simple et bonne raison que l'Inuk continue à se marier selon les moeurs qui lui sont propres et son mariage n'est sujet à aucun enregistrement sauf dans les rares cas où il est célébré religieusement. Considérant que nous travaillons déjà avec de fort petits nombres, s'il faut ajouter à cela un sous-enregistrement aussi important, nos études perdent alors une grande partie de leur fiabilité.

Il faut donc remédier à ce problème mais comment? Dans un premier temps nous avons pensé à une mesure à prendre pour réparer du moins en majeure partie les failles de notre fichier. Pour ce faire, nous avons préparé ce que nous avons

F. 3. Evolution du sous-enregistrement des naissances à l'état civil 1926-1972.



appelé notre "Campagne d'Officialisation". Il s'agit là d'une sorte d'enquête sur le terrain pour pouvoir connaître et surtout faire officialiser avec l'aide du gouvernement les dates de naissance de tous les Inuit vivant sur le territoire du Nouveau-Québec. Il sera fait de même pour les décès et pour les adoptions. Pour cette opération, il nous faut l'étroite collaboration des Inuit d'une part et du ministère des Affaires Sociales - Registre de Population d'autre part. Ainsi, chaque Inuk aura un acte de naissance officiel et pourra ainsi reçevoir les allocations auxquelles il a droit mais dont il ignore l'existence. D'autre part le gouvernement aura sur dossier une date immuable, c'est-à-dire qu'elle cessera de fluctuer suivant les besoins de l'Inuk.

Toutefois une telle opération ne solutionne aucun problème. Elle améliore considérablement - du moins nous le souhaitons - les données de notre fichier mais seulement pour les évènements passés. Faire une enquête dans cette région nordique est très ornéreux. On ne peut se permettre d'en faire régulièrement, question de mettre à jour le fichier. Il faut donc penser à d'autres moyens d'améliorer dans l'avenir la qualité des données. Mais comment s'y prendre? Comment peut-on persuader les Inuit de l'importance de l'enregistrement? En insistant pour qu'il soit obligatoire pour l'obtention des allocations familiales, de l'assurance maladie, des pensions de vieillesse, etc.? Ce serait peut-être une solution. Mais avant de convaincre les Inuit, il faudrait convaincre les administrateurs en place. Faut-il mettre sur pied un deuxième système d'enregistrement parallèle? Une meilleure collaboration entre le fédéral qui s'occupe de l'attribution des numéros de disque et le provincial qui enregistre la naissance à l'état civil ne nuirait certainement pas.

Enfin c'est sûrement beaucoup plus à certaines personnes en place qu'à nous de juger quels seraient les meilleurs moyens d'améliorer l'enregistrement des naissances et des décès des Inuit du Nouveau-Québec.

Connaissant beaucoup mieux cette population ils sont bien mieux placés pour prévoir leur réaction face à telle ou telle mesure et de présumer du succès d'une démarche ou d'une autre.

Tableau 3

Evaluation du sous-enregistrement

Année	Naissances enregistrées	Naissances retrouvées par le fichier	Naissances retrouvées dans les listes	Total des naissances	% d'enregistrement
1926	31	14	4	49	63.26
1927	31	21	6	58	53.45
1928	24	7	9	40	60.00
1929	26	10	4	40	65.00
1930	53	9	5	67	79.10
1931	49	17	6	72	68.05
1932	39	23	5	67	58.21
1933	53	14	7	74	71.62
1934	51	8	8	67	76.12
1935	55	10	11	76	72.37
1936	39	12	9	60	65.00
1937	44	17	3	64	68.75
1938	47	12	3	62	75.81
1939	29	14	7	50	58.00
1940	42	8	5	55	76.36
1941	40	14	6	60	66.66
1942	32	18	8	68	47.06
1943	53	12	11	76	69.74
1944	48	10	6	64	75.00
1945	47	14	7	68	69.12
1946	84	11	5	100	84.00
1947	82	8	9	99	82.89
1948	101	3	12	116	87.07
1949	98	-	6	104	94.23
1950	96	1	11	108	88.89
1951	98	-	10	108	90.74
1952	92	2	5	99	92.93
1953	96	1	9	106	90.57
1954	104	1	11	116	89.65
1955	83	5	18	106	78.30
1956	93	1	28	122	76.23
1957	115	3	14	132	87.12
1958	129	1	9	139	92.81
1959	108	1	18	127	85.04
1960	128	1	14	143	89.51
1961	144	-	13	157	91.72
1962	130	1	18	149	87.25
1963	146	-	23	169	86.39
1964	151	1	24	176	85.80
1965	145	-	10	155	93.55
1966	122	2	36	160	76.25
1967	132	2	19	153	86.27
1968	108	-	58	166	65.06
1969	74	2	88	164	45.12
1970	115	2	31	148	77.70
1971	140	-	5	145	96.55
1972	98	-	5	103	95.15

EXPERIENCE DE DEMOGRAPHIE DANS LA REGION DE L'UNGAVA, NOUVEAU-QUEBEC

Demographic experience in the Ungava area of New Quebec

FRANCINE TREMBLAY[1]

La démographie dans la région de l'Ungava au Nouveau-Québec revêt un caractère historique et dynamique tout à fait passionnant. L'arrivée des Blancs au Nord, tout particulièrement des représentants de divers organismes tels que: GRC, Missions catholique et anglicane, gouvernements provincial et fédéral, a apporté des concepts nouveaux aux inuit. Il en est ainsi des procédures administratives requises pour l'application des lois sociales et les processus de contrôle démographique pour fins statistiques. Les inuit ont dû rapidement se soumettre à des entrevues qui demandaient souvent des réponses précises. Le blanc transmettait donc par écrit les réponses. Ces dernières étaient, selon l'éducation et la culture du blanc, interprétées et par conséquent, sorties du contexte historique et culturel inuk.

La notion de jour et de mois en terme chiffral n'existait pas pour les inuit comme nous le concevons. Tout mouvement démographique était associé au mouvement de la nature, et plus précisément aux cycles saisonniers. Encore de nos jours en 1976, lors de nos entrevues avec les vieux du village, lorsqu'il est temps d'établir la preuve d'âge pour vérifier l'admissibilité à la pension de vieillesse, nous formons un tribunal. Nous retrouvons la plupart du temps des données associées aux cycles et activités des saisons nordiques.

La cueillette des données socio-démographiques précises pour fins de statistique était et est encore très difficile. En effet, lorsque le blanc doit administrer des formules et effectuer des entrevues pour obtenir certaines données, il arrive que son court séjour dans les communautées nordiques isolées ne lui permet pas toujours:

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a) d'avoir une certaine connaissance des structures et interrelations socio-familiales existantes;

b) d'avoir une certaine relation de confiance avec les inuit afin de pallier au problème du manque de communication verbale;

c) d'avoir un bon partenaire inuit de travail entraîné comme informateur et personne-ressource;

ces trois éléments sont importants dans le processus de collecte des données.

En ce qui regarde notre service, dans les années 1972, un plan d'intégration pour une amélioration du mode de cueillette et de distribution des données démographiques se dessinait tranquillement. De maintes discussions et rencontres furent effectuées avec différents organismes: Monsieur Jean-Guy Létourneau du Service des Affaires Communautaires du Ministère des Affaires Indiennes, Monsieur JacquesLégaré de l'Université de Montréal et Monsieur Jean-Guy Fredette du Ministère des Affaires Sociales ont particpé et ont apporté un support au projet d'ensemble.

Notre travail social depuis 1971 a permis que l'on visite sytématiquement toutes les familles inuit de la région de l'Ungava; nos tournées semi-annuelles permettent une continuité de notre contact avec ces mêmes familles. On découvre que, par le biais de la relation soutenue avec ces familles, une compréhension de plus en plus grande des structures et interrelations socio-familiales s'établit; de plus, le travail de cueillette des données pour fins d'administration et d'application des lois sociales ou pour fins purement statistiques, s'avère de par cette relation beaucoup plus facile.

Au fur et à mesure de l'implantation et de l'organisation des services sociaux dans l'Ungava, plus spécifiquement les services reliés à la santé et auxfamilles, un secteur démographie se développait tout naturellement. La cueillette des données démographiques s'amalgamait agréablement au travail social proprement dit.

Donc, sans trop s'en apercevoir, le travail soutenu et concentré pour des fins de montage d'un seul centre de cueillette, de réception et de distribution des données sur les populations inuit de l'Ungava, a finalement créé un secteur démographie avec du personnel inuk spécialisé. A l'intérieur de notre service, la démographie fait partie d'une activité intégrée à nos fonctions sociales.

Depuis novembre 1972, avec l'aide d'amis bénévoles et notre personnel inuk, nous avons réalisé certaines étapes importantes:

1. Rapatriement des responsabilités en matière d'administration des lois, formules et dossiers d'allocation familiale provinciale et fédérale et d'allocation de vieillesse;

2. Rapatriement des responsabilités d'enregistrement démographiques (naissances et décès) des inuit de la région de l'Ungava; rapatriement de la responsabilité d'enregistrement des inuit par distribution de numéros de disque; fin aux problèmes de sous-enregistrement;

3. Contrôle sur les systèmes d'adoption par coutumes esquimaudes;

4. Regroupement et travail de persuasion auprès de tous les organismes produisant annuellement une liste de population; soumission d'une liste de population revisée et mise à jour sur le terrain;

5. Reconnaissance de la part de ces organismes de notre compétence en la matière; production de listes et statistiques de population à tous les six mois. Listes revisées et mises à jour continuellement. Tirage: au moins 100 copies.

6. Révision et mise à jour des listes lors de nos tournées annuelles dans les postes; visite systématique dans chaque famille;

7. Montage d'un fichier central:émission d'un numéro d'assurance sociale pour chaque individu inuk de "0" an et plus;

8. Montage d'in fichier central: assurance maladie pour chaque individu;

9. Contrôle des mouvements démographiques.

Les étapes à réaliser

1. Embaucher un autre professionnel;

2. Additionner les noms et prénoms des résidents de chaque poste en utilisant la grammaire et l'orthographe inuit. Embaucher un spécialiste à cet effet, pour travailler sur les listes de population;

3. INTEGRER NOS DONNEES DE POPULATION ACQUISES SUR LE PROCESSUS D'INFORMATIQUE;

4. Etablir des preuves d'âge pour tous les vieillards de la région de l'Ungava;

5. Fournir semi-annuellement ou tout au moins annuellement, des statistiques précises sur le nombre de naissances et de décès par poste;

6. Etablir des mécanismes de consultation avec des organismes de recherche et leur fournir des instruments de travail et des ressources humaines;

7. Travailler dans le but d'implanter un service spécialisé en démographie qui pourrait éventuellement se rattacher à la structure de gouvernement régional.

DEMOGRAPHIC DATA ON THE YUKON TERRITORY AND THE NORTHWEST TERRITORIES

Données démographiques sur le Territoire du Yukon et les Territoires du Nord-Ouest.

R. RAGHUNATHAN[1]

ABSTRACT. - This paper examines the demographic statistics available for the Northwest Territories and the Yukon Territory in the context of the need for such data in the Federal and Territorial Governments. The principal published and unpublished sources of data are identified and their limitations are examined. Lack of accurate, timely data relating to ethnicity, location, migration and length of residency are categorised as the major factors inhibiting the capacity of existing sources to meet the needs.

Three possible avenues of future effort to provide current demographic statistics on the northern territories are discussed - Census, Sampling and Administrative Records. The pros and cons of each are weighed and it is concluded that a combination of all three approaches is required to improve demographic data.

It is further suggested that decennial and quinquennial censuses should continue to be the prime source of northern demographic data for census years and measures are proposed to maintain and improve the quantity and quality of such data. For intercensal years, advantage should be taken of current administrative data for compilation of estimates relating to the rural areas in the North, and reliance placed on surveys and/or census for the urban North.

RESUME. - L'auteur examine ici les données démographiques disponibles sur les Territoires du Nord Ouest et le Yukon en termes de besoins gouvernementaux. Les principales sources de données publiées ou non, sont passées en revue et leurs limites sont soulignées. Le problème majeur réside dans l'absence de données fiables sur l'origine ethnique, le lieu de résidence, la durée de séjour et les migrations.

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Suit une étude de trois moyens possibles de se procurer de meilleures statistiques: les recensements, des enquêtes et l'exploitation de dossiers administratifs existants. Les avantages et les désavantages de chacun sont pesés et l'auteur en vient à la conclusion qu'un amalgame est nécessaire.

Il est plus loin suggéré que les recensements quinquennaux et décennaux demeurent la principale source de données et que pour les années intecensistaires on tire le maximum de renseignements des données administratives pour les régions rurales. D'autre part, de petits recensements et/ou des enquêtes pourraint être menés dans les centres urbains nordiques.

INTRODUCTION

It is not sufficient to say that demographic data for the Northwest Territories and the Yukon, based on the national standard, compares favourably with that available for the provinces of Canada. Although there are numerous sources from which information may be retrieved on specific population characteristics and numbers on the North, there is a great deal of doubt about their accuracy and timeliness due to apparent inconsistencies with regard to the most basic details, such as number and location of people, age, sex, ethnic origin, marital status, length of residency and place of origin. However, there is a reasonable approximation to reality and, despite some reservations, data from the Quinquennial and Decennial censuses appear to be the best available sources, combined with other available administrative records.

Any type of large-scale date-gathering system in the North would be costly in view of circumstances which exist that

are peculiar to the area, e.g. the large number of indigenous people and the amount of movement into and out of the Territories, and careful thought must, therefore, be given to both the type of data sought and the priority to be attached to it.

Background to Northern Development Data Requirements

The Federal and Territorial Governments' overall interest in demographic data need not be extensively explored, but some general background would be useful. In 1971, the Minister of Indian Affairs and Northern Development sought, and secured from the Cabinet, authority to set out, in more explicit terms than had previously existed, the objectives and priorities for northern development for use as guidelines within which to formulate policies and programmes development. These objectives and priorities dealt, in general, with the evolution of the Territorial Governments, the maintenance of Canadian sovereignty over the northern regions, the protection of the environment and its potential for recreational purposes, and the contribution of the North to the social and cultural development of Canada.

Two of the objectives specifically stated that it was the Government's intention, firstly,

> "To provide for a higher standard of living, quality of life and equality of opportunity for northern residents by methods which are compatible with their own preferences and aspirations " ;

and, secondly,

> "To encourage viable economic development within regions of the northern territories so as to realize their potential contribution to the national economy and the material well-being of Canadians."

Terms such as a "higher standard of living", "equality of opportunity" or "viable economic development" are used, obviously, to provide some kind of qualitative description in which measurement is implied but not expressed. For how can any sense be made out of the term "a higher standard of living" unless it is proposed to engage in some kind of activity which would permit of a comparison between the present and a specified point of time in the past? Similarly, "equality of opportunity" would require identification of a specific group and its differences

when compared with another, or to a formulated objective.

It was apparent then that there was a need for pertinent statistical data. Just what form this should take could be determined by a study of Government's priorities with regard to northern development. The most important of these, and the one which should concern the Workshop most, should be, to quote the Minister, "the stimulation and strengthening of the people programmes in the North", which priority would bring to the fore all the problems of statistical measurement grouped under the formal category of "demography".

To be more specific about the exact character of the demographic data required in relation to the scope of basic data available, one could, perhaps, start with the system of classification used by Professor Milton Freeman in the paper he gave to the Seminar on Guidelines for Scientific Activities in Northern Canada, held at Mont Gabriel, Quebec, in October 1972. In his paper, Professor Freeman divided population studies into two branches: formal demographic studies which cover the traditional field of vital statistics; and social demographic studies, which he defined as covering the "more qualitative, social, attitudinal and behavioral aspects of population-related matters." These two distinctions have, to a large extent, been made in the objectives of the first two days of this Workshop, and it is proposed to deal with the first of these.

Obviously, population counts that are as accurate as they can be and which distinguish the population in terms of sex, age and marital status, and corresponding birth and death rate measures should be a requirement for both branches. In addition, however, there are certain other important characteristics that must be taken into consideration with respect to the Territories. These are the ethnic composition of the population, the location of the population within the Territories, migration into and from the Territories, and length of residency in the Territories.

Problems of Definition

There is, it is obvious, a close correlation between ethnicity and certain attitudes towards life which, of necessity, are of significance in policy planning. It is important, therefore, to acquire a clear understanding of the relative sizes of the native and non-native populations over time and deal with the problems of consistency of definitions among systems designed to collect such information.

Ethnicity, in recent censuses, has been defined in terms of the ethnicity of the respondent's male parent. This has posed a problem. Most Métis, for example, have a male parent or a grandparent who is or was a non-native, and a mother or grandmother who is or was of Indian or Eskimo ancestry. Under the census definition of ethnicity, all such persons would be classified as non-native. This has probably inflated the size of that portion of the population of the northern territories which had an outlook on life similar to that of persons who had migrated into the North from southern Canada. Conversely, it has diminished the size of that portion of the population with an outlook on society more akin to that of the native people. One of the issues facing government policy-makers has been this difference of opinion between two sets of values, and the matter has aroused more than academic interest. Moreover, any future negotiations between native people and government would require a clear understanding regarding eligibility for participation in resulting settlements, based on criteria, as yet undecided, for ethnicity, and to assist in the co-ordination of, for example, government affirmative action programs for native people with other programs sponsored under any settlement of land claims.

The problem of location of northern people was a particular problem from at least two aspects. Many sources of information on population from administrative systems or other statistical collections did not even provide published information for each Territory, let alone for districts or communities within each Territory. Yet community-based demographic studies were in increasing demand as scientists, government and industry launched studies based on "impact areas", "pipeline corridors", and areas defined for regional economic planning. Better population data by community, if accurate and consistent, would provide more reliable and up-to-date calculations of territorial and municipal per-capita-based grants and facilitate planning and administration of related programs.

Migration, as it pertains to population growth and decline, and the characteristics of the migrants themselves, has been an important factor, and will become even more important to the measurement of population growth. Related to this, during periods in which major construction projects are being undertaken, would be the requirement for some comprehension of what is understood by length of residency and, even, expected duration of residency, to ensure that basic data for population projections, for example, would not be unduly distorted by the temporary residents of the Territories.

Vital statistics should supply data on birth, death and marriage rates, and on in-and-out-migration from the Territories, particularly by ethnic groups. This data will permit the preparation of reasonable estimates of population sizes in the future. Birth and death rates are, of course, influenced by the general state of health of the population, and data in these and future expectations would also be necessary to forecast, in turn, the future rates for vital statistics.

Accuracy, Timeliness and Cost

The importance of accuracy, timeliness and cost cannot be disregarded. The observation has been made that statisticians should avoid creating a false sense of accuracy by purporting to count to the last half bushel of wheat. To achieve one hundred per cent accuracy in head counts and, moreover, to have such information for the relatively immediate past, would be an unattainable ideal in a world that is in constant flux. To attempt even a close approximation would be to commit to this purpose resources which could more profitably be used elsewhere. Yet, there was a need for more accuracy and timeliness than was available at present. The relatively small population in the two northern territories - under 60,000 people at the most - was now in a stage of transition and the effects of this transition were of such importance, especially to the native people, that the two levels of government in the North has spent, in the fiscal year just ended, about $230 million on various programmes to improve the quality of life, and another $109 million on programmes promoting economic growth, the two northern objectives so closely associated with demographic consideration. Decisions regarding the degree of accuracy and timeliness required in the retrieval of demographic data, and the price that should be paid for them, will have to be weighed against the probable costs incurred if the decision-makers responsible for these disbursements were provided with inadequate information.

Sources and Limitations

Having established that there is a requirement for demographic data by the Federal and Territorial Governments, and suggested where emphasis should be placed with regard to future work in this area, it becomes necessary to review existing sources and their general limitations as a guide to researchers and other interested persons on available information.

The principal published sources of demographic data on the North have been the decennial and quinquennial censuses conducted by Statistics Canada.

In addition to these census counts, estimates have also been constructed for the total population in each territory on both an annual and quarterly basis. These estimates have been based on preceding decennial or quinquennial census counts, to which have been added the births for each year, and from which the deaths are subtracted. Family allowance statistics, showing the number of migrant families by province and territory, have been used in estimating interprovincial shifts in population. Each succeeding census has, in effect, served as a basis for revision of all annual estimates of each intercensal period.

Statistics compiled from the records of births, deaths, marriages and divorces registered in the two Territories have been published annually for each Territory in the Statistics Canada publication, Vital Statistics. Vital statistics have been indispensable to the interpretation of population change, and have provided a measure not only of the rate at which the population has increased by natural means, but also of the rate at which women are marrying and reproducing.

Population projections have been widely used in social and economic planning and policy decisions. In June 1974, Statistics Canada published its first official population projections for Canada, the individual provinces and each of the two Territories, to the year 2001. In November 1975, their programme on projections was extended to provide household and family projections to the year 2001. Four alternative sets of projections were presented in order to cover the range of factors influencing the growth and structure of population, households and families.

All the sources referred to so far have originated from Statistics Canada. There have been, however, other sources of published and unpublished demographic data on the North which originate from the Department of Indian Affairs and Northern Development (DIAND) and/or the two Territorial Governments. A few are listed below.

DIAND has published Population Projections of the Yukon and Northwest Territories to 1981, and one of the basic differences between these projections and those of Statistics Canada is that the departmental projections

presented data on an ethnic basis. Like Statistics Canada, DIAND has presented four series of projections for each Territory.

Another major source of demographic data from DIAND has been the Northern Manpower Survey Program undertaken between January 1969 and December 1971. This Program consisted of a series of regional manpower surveys conducted throughout the Northwest Territories and the Yukon. By means of a specially developed questionnaire, basic demographic and labour force data were obtained on large numbers of Territorial residents.

The Annual Estimates of Registered Indian Population, classified by age and sex, also issued by ... another source of demographic data on the registered Indian population in the two Territories.

At the Territorial Government level, there have been two main sources which have the potential to provide current demographic data for the two northern territories on a consistent and continuing basis.

The first is related to medicare and health insurance records maintained by the Territorial Governments, which provide monthly information relating to age, sex, family and ethnic status of each resident, from which similar statistics could be compiled for community and/or region.

A second potential source of demographic data has been the Territorial Employment Record and Information System (TERIS) established in the Northwest Territories, which has been concerned with the design and implementation of a labour force information system to obtain as complete and accurate data as possible on the active labour force in each Northwest Territories community, as well as the potential labour force from that portion of the total population between 14 and 65 years of age.

While such a system has not been implemented for the Yukon Territory as yet, consideration is being given to a pilot project to study the feasibility of extending the national labour force survey into the Yukon. This pilot project would test

- the ability of the labour force survey mechanism to provide meaningful, accurate, monthly information on labour force characteristics of the residents of the Yukon Territory;

- the operational and conceptual feasibility of extending the national labour force survey into the Yukon Territory; and

- the costs associated with implementing such a survey.

In addition, there are occasional population counts compiled by territorial government which may be of some assistance, e.g. the censuses conducted by the Northwest Territories Government in the settlements of Yellowknife and Fort Simpson in 1974.

The Canada Post Office has published, on an annual basis, the "Householder Directory" which lists, for all places where commercial directories are not available, the name, sex, occupation and community of all persons having a postal address. However, the limitations and shortcomings identified by researchers have indicated that the sum total of data available from this Directory falls short of requirements.

Limitations

Census data

An appraisal of demographic data available from the decennial and quinquennial censuses has indicated that methodological, collection and other problems associated with census data collection inhibit the use of information from the census for demographic research on northern people.

There has been, for example, the issue of confidentiality. The smallness of the population and the miniscule representation of native people in certain areas of activity havemade it impossible to obtain a fine breakdown of census data. This has been particularly noticeable in efforts which have been made to compare the incomes of natives and non-natives by occupation. In a number of cases, the representation of natives in certain occupations, especially those in the managerial and professional categories, was so nominal that Statistics Canada was not prepared to provide more detailed income data than that of major occupational grouping.

Statistics Canada has also ensured confidentiality by a process known as "random rounding" whereby the final digit of each cell count is increased or reduced to the next multiple of five if they

do not already in 0 or 5. A published figure of 25, for example, could represent an actual count ranging from 21 to 29. The rationale for the procedure has been that the addition or subtraction of a small residual reduced the risk of disclosure inherent in small cell counts, without seriously affecting the quality of the data available to the researcher where complementary information was also available. This process has had quite a distorting effect with regard to small populations, however, e.g., native females in the Yukon Territory of a specific age group who claimed to be in the labour force.

In addition, definitional changes between one census and another, and between census and surveys, limited the scope for establishing comparisons over a period of time. Examples of these changes were the dropping of the category of "Métis" after the 1941 Census, and the alteration of occupational classifications between 1961 and 1971, which made it difficult to compare changes in the employment area between these two years. These inconsistencies over time have not made any easier the task of policy makers who need to evaluate periodically the progress they have made in achieving objectives.

Then again, one could question whether June is the most appropriate month for carrying out the Census, since most of the native population would be in the bush or in camps at that time of the year, or whether the employment of enumerators in the North to obtain census data was better than the mail-back method employed in the south.

Vital Statistics Data

As stated, vital statistics data published annually contained information relating to births, deaths, etc. for each Territory separately. However, in view of the time lag between the end of a year and the publication of the annual summary, the resultant data might not be current enough to meet the requirements of researchers.

Statistics Canada has published regularly a quarterly summary of vital statistics for the ten provinces. For some reason, data relating to the two Territories have not been included.

Part of the problem could be solved by seeking current vital statistics data directly from source, that is from the Registrars of Vital Statistics in the two Territories. Such data are compiled in each Territory on a monthly basis and, what is more, on an ethnic basis.

Medicare Registration Records and TERIS

The problems with Medicare Records as a source of demographic data are two-fold.

To start with, there has been the problem of confidentiality. Use of data from individual medicare files for purposes other than those associated with the administration of the health care programme might meet with resistance from the public and possibly from the plan administrator. One way to solve this would be to establish strict guidelines to preserve the confidentiality of medicare data used for demographic research.

The second problem has been operational. A new resident would not be eligible to join a Territorial health plan until he had been in the Territory for a period of three months. A resident also had the right to stay in the plan for a period of three months after he had left the Territory. Medicare records would, therefore, require some correction to remedy this situation prior to their use in demographic research.

Another limitation with regard to the Medicare records data has been the lack of separate information for Métis.

With regard to TERIS, the quality of its output has not yet been evaluated. As a recently inaugurated system, its use as a source of demographic data, would have to await such evaluation and the test of time.

Migration

As people move from one place of residence to another within the nation's borders, varying patterns of migration are set which differ in intensity and directional flow. These internal movements have marked effects on regional

economies and any predictions on future population growth.

Since migration is the outcome of a variety of demographic, socio-economic and even political factors, there has been a fundamental need to acquire information on the volume and pattern of migration, and the factors responsible for it. Available migration data related to the North has been derived from censuses conducted by Statistics Canada. The 1971 Census, for example, collected information on migration by asking respondents to state their place of residence five years before (i.e. June 1, 1966). However, figures thus obtained referred only to a period of five years (i.e. 1966-1971) and did not provide the annual flow of migration which was the prime concern to the two northern Territories. A possible source of data on this subject might be the Canada Post Office's Householder Directory.

As noted, Statistics Canada has used data from family allowance statistics to estimate interprovincial migration for the purpose of compiling quarterly and annual estimates of population for intercensal years. Such estimates have understated the extent of net migration to the North, since a growing proportion of people moving to the two territories have been young couples without children and unmarried adults, all of whom fall outside the scope of family allowance statistics. As a result, Statistics Canada's most recent quarterly estimates indicate that the population of the Yukon and Northwest Territories was 21,000 and 38,000 respectively. Territorial authorities, however, have estimated their populations at over 22,000 and 46,000 - the differences are significant.

Unless the body of knowledge relating to net migration to the North is developed in depth, any attempt to study northern demography will perforce remain rudimentary and incomplete.

Lack of Ethnic Identification

Lack of ethnic identification in published data has placed a restriction on the usefulness to northern demographers of Statistics Canada's data source relating to Quarterly and Annual Estimates of Population, Vital Statistics and Projections of Population Households and Families. Part of the problem can be attributed

to the fact that the need for data on an ethnic basis did not appear to be a matter of priority in the overall provincial and federal statistical plans. The absence of demographic data has been particularly acute in the area of statistics relating to the Métis population in the North. This situation will be further aggravated by Statistics Canada's decision to eliminate the question relating to ethnicity from the 1976 census questionnaire.

Future Efforts

Avenues will, obviously, have to be explored to generate demographic data relating to the native population of the North on a regular and consistent basis.

Mention has been made of censuses - both decennial and quinquennial - as being the principal source of demographic data on the North, for, in addition to furnishing a vast amount of information for the relevant years, they have provided the base on which reasonably accurate estimates relating to the intercensal years could and should be built. Future efforts should be directed, therefore, to updating the range of information available from the census during the intercensal years

Censuses are and will continue to be the prime source of demographic data on the North for the census years. Since the basic data from which the estimates will be constructed will come from these censuses, maintaining and improving the quantity and quality of demographic data available from the decennial and quinquennial efforts of Statistics Canada are preconditions to the success of any future efforts in this area. Serious consideration should, for instance, be given to the reintroduction of an appropriately worded ethnic question for the 1981 census in the North, and to ensuring that data from the quinquennial censuses are sufficiently detailed so as to provide meaningful information.

To provide current, reliable demographic statistics, we can take, basically, three approaches or some combination of the three are suggested: a census at, say, annual intervals which would state clearly the population counts and characteristics desired; some form of sampling, say annually, intended to provide sufficiently reliable data to permit the updating of decennial and quinquennial censuses, with certain modifications to ensure the information obtained is useful for northern research, e.g. the ethnic identification expanded to identify Métis; and lastly, the use of data from administrative systems to update population

figures and provide the information required for reasonably accurate projections of population growth.

Censuses are very expensive and cost considerations alone would preclude any serious consideration being given to an annual census which would be further complicated by the burden placed on the territorial population to respond, and the effect on the quality and quantity of the returns obtained. The sampling effort that would be required on a territory-wide basis to update Census information to an acceptable level of reliability, has not been studied.

Setting aside comprehensive sampling, although selective sampling for specific purposes and locations may be possible, it is apparent that any sampling process providing comprehensive and accurate data would require a sample size that approached a census. To obtain statistically significant results on, for instance, the number of Métis males between the ages of 15 and 17, located in a certain community, would require a large sample relative to the total population. And, as is known, Statistics Canada already require, for reasons of accuracy, that the long census form be completed by all residents of the two Territories, rather than by just a one-third sample.

The advantage of using administrative systems, even with some modification to better reflect demographic measurement requirements, has been obvious: the data has been available without additional expense or burden upon the population. The problems have also been obvious: inconsistency with regard to definitions, timeliners, and confidentiality of released data.

Current data on natural increase and net migration have been available on a consistent and regular basis from Territorial records. Births and death for each community on an ethnic basis are recorded by the Registrar of Vital Statistics in each Territory, and summary data on vital statistics are forwarded to Statistics Canada every month. For most of the small settlements in the rural areas of the North, natural increase has been the dominant factor responsible for changes in population from one year to the next, and from one census to another. It might, therefore, be feasible to develop reasonably accurate estimates of the North's rural population on a frequent basis from data maintained by the Registrar of Vital Statistics.

With regard to the urban areas in the North, the problems are two-fold:

are two-fold:

(i) net migration, which has been an increasingly important factor in population changes; and

(ii) the transient nature of a large proportion of in-migrants, and high rate of turnover, especially in resource based communities, which has made compilation of population estimates onerous and, at best, imperfect.

Two alternatives are suggested with regard to the estimation problems in urban areas of the North.

1. Periodical (possibly annual) Census

As stated earlier, censuses were conducted by the Government of the Northwest Territories in two or three settlements during 1974. The issue has been one of cost.

2. Sample Surveys

The objective of the sample survey would be to determine the number of migrants who had moved into the urban settlements since the previous census or survey. To this would be added data relating to natural increase, obtained from the Registrar of Vital Statistics, to arrive at current population estimates.

In both cases, test checks could be made on data obtained by reference to available territorial administrative records, such as medicare registrations or TERIS.

LA CONVENTION DE LA BAIE JAMES ET SES CONSEQUENCES SUR LA COLLECTE DES DONNEES DE POPULATION DANS LE NORD DU QUEBEC

The James Bay Agreement and its Effect upon the Collection of Data on the Population of Northern Quebec

GINETTE LACHANCE-BRULOTTE[1]

RESUME. - Suite à la Convention de la Baie James, une Commission d'inscription sera créée dans le but d'établir des listes officielles de bénéficiaires Cris et Inuit ayant droit aux avantages qui découlent de la Convention. Des registres de population crie et inuit seront par la suite tenus par le Québec. On espère que la création de ces registres donnera lieu à une amélioration de la qualité des données touchant les populationsautochtones du Nord du Québec.

ABSTRACT. - Under the James Bay Agreement, an Enrollment Commission will be establsihed to prepare official lists of Crees and Inuit eligible for benefits under the terms of the Agreement. Population registers of Crees and Inuit will be set up and maintained by the Quebec Government. It is to be hoped that the creation of these registers will improve the quality of the data related to the native population of Northern Quebec.

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INTRODUCTION

Le 11 novembre dernier, la Convention entre le Gouvernement du Québec, la Société d'Energie de la Baie James, la Société de Développement de la Baie James, le Grand conseil des Cris, la Northern Quebec Inuit Association et le Gouvernement du Québec, était signée.

En vertu de cette convention, les Cris et les Inuit cèdent leurs droits et titres aux terres du Québec en considération des droits et avantages qui leur sont accordés. Ainsi des terres d'une superficie de 5,400 milles carrés sont réservées à l'usage exclusif des Cris et des Inuit du Québec. Des droits exclusifs de chasse, pêche et trappe sur quelque 60,000 milles carrés de territoire leur sont accordés. En compensation de la cession des droits, 225 millions de dollars seront payés par le Canada et le Québec aux corporations cries et inuit de 1975 à 1997.

Un chapitre de la Convention porte sur l'inscription de la population à titre de bénéficiaire aux termes de la Convention. Ce chapitre définit les critères d'admissibilité et les modalités d'inscription initiale; il crée l'obligation pour le Québec de tenir un registre cri et un registre inuit dans lesquels figurent les noms des personnes ayant droit d'être inscrites conformément aux critères établis.

Pas conséquent, la mise en vigueur de la Convention aura des effets directs sur la collecte de données démographiques dans le Nord du Québec, dont nous voudrions souligner ici les principaux aspects.

Nous exposerons d'abord, sans entrer dans tous les détails juridiques, les principales clauses d'admissibilité comme bénéficiaire de la Convention. Nous présenterons ensuite le processus initial d'inscription aux deux registres et de mise à jour de ces registres. Enfin, nous discuterons des conséquences attendues de la mise sur pied des registres cris et inuit, sur la quantité et la qualité des données démographiques portant sur les autochtones du nord québécois.

I. CLAUSES D'ADMISSIBILITE:

Les règles d'admissibilité sont assez semblables pour les Cris et les Inuit; toutefois, certaines différences méritent d'être mentionnées:-

1. Cris:

Pour ce qui est des Cris, est admissible toute personne qui, au 15 novembre 1974, était

1) inscrite au Registre des Indiens (selon la Loi sur les Indiens) comme membre d'une des huit bandes cries du Québec (Waswanipi, Mistassini, Nemaska, Eastmain, Rupert House, Old Factory, Fort George, Great Whale River);

2) d'ascendance crie résidant habituellement dans le Territoire;

3) d'ascendance crie ou indienne et reconnue par l'une des communautés cries comme ayant été l'un de ses membres;

4) l'enfant adoptif d'une personne mentionnée en 1, 2 ou 3.

A compter du 16 novembre 1974, tous les enfants légitimes ou illégitimes par filiation paternelle ou maternelle, des personnes déjà reconnues comme admissibles ainsi que leurs enfants adoptifs (pourvu qu'ils soient mineurs au moment de l'adoption) sont aussi admissibles.

2. Inuit:

Il n'existe pas pour les Inuit de registre défini par la Loi qui puisse servir de point de départ pour la création du registre des Inuit, comme c'est le cas pour les Indiens.

Est aussi considérée comme éligible aux bénéfices de la Convention, toute personne qui, au 16 novembre 1974, était d'ascendance inuit née au Québec, ou résidait habituellement au Québec ou, même si elle ne réside pas habituellement au

Québec, était reconnue par une des communautés inuit comme l'un de ses membres.

A partir du 16 novembre 1974, tout comme dans le cas des Cris, les enfants légitimes, illégitimes ou adoptifs (pourvu qu'ils soient mineurs au moment de l'adoption) par filiation paternelle ou maternelle, des personnes inuit reconnues admissibles le seront aussi.

Cette dernière clause soulève donc toute la question des mariages mixtes. Il ressort d'une part que le mariage d'une personne déjà admise ne modifie en rien son statut: ceci vaut tant pour les Cris que pour les Inuit. Par contre, le conjoint légitime d'une personne crie n'est pas admissible, s'il n'est pas d'ascendance indienne, alors que le conjoint légal d'un ou d'une Inuk le devient quelle que soit son origine ethnique.

En d'autres termes, ceci signifie que si une Indienne épouse un Blanc, elle reste admissible, ainsi que ses enfants nés ou à naître, mais son époux n'esp pas admissible. Par contre, un Blanc qui épouse une Inuk devient admissible. On verra plus loin les différences que ces clauses impliquent par rapport au Registre des Indiens ainsi que leurs conséquences.

II. CREATION DU REGISTRE DES CRIS ET DU REGISTRE DES INUIT.

Suite à la Convention, deux Registres doivent d'abord être créés puis maintenus en fonction des critères d'admissibilité mentionnés plus haut.

Durant la phase initiale d'inscription, une Commission d'inscription est chargée de dresser les listes officielles des personnes ayant droit d'être inscrites selon les critères établis par la Convention, avant le 1er novembre 1977. Cette Commission a le pouvoir d'établir ses propres procédures et ses critères de preuves; elle doit préparer les renseignements et formulaires dont les comités locaux d'inscription auront besoin pour l'inscription.

Un Comité local d'inscription doit être créé dans chaque communauté crie et chaque communauté inuit; ils sont composés de trois membres résidents chacun, désignés par le conseil de bande cri ou de corporation inuk.

Le comité local d'inscription a pour tâche de faire connaître le processus d'inscription aux membres des communautés, de distribuer et recueillir les formulaires d'inscription, de dresser la liste des personnes qui, à leur avis, ont le droit d'être inscrites et la liste de toutes les personnes refusées, accompagnée des renseignements et documents pertinents.

Lorsque les listes sont complétées, elles doivent être publiées et affichées (au plus tard le 1er novembre 1977) et, à ce moment, débute une période d'appel de six mois. Une Commission d'appel pour les autochtones est créée par le Québec pour entendre les appels interjetés et statuer sur eux.

Une fois les deux Registres ainsi établis, ils sont tenus à jour par le secrétaire général du Registre de la Population du Québec.

Un agent local d'inscription, nommé par le Québec dans chaque communauté crie et chaque communauté inuit, est chargé de tenir à jour la liste de la communauté et d'aviser immédiatement le secrétaire général du Registre de la Population de tous les changements à la liste qui entraînent des changements aux registres.

III. CONSEQUENCE SUR LA QUANTITE ET LA QUALITE DES DONNEES DEMOGRAPHIQUES SUR LES AUTOCHTONES DU NORD DU QUEBEC

Ainsi donc, la mise en vigueur de la Convention doit établir des mécanismes précis de collecte des données de population pour les autochtones du Nord du Québec, en identifiant des personnes responsables de la collecte, en créant des canaux de transmission ainsi qu'un système central de stockage, et vraisemblement de traitement, des données recueillies.

Pour ce qui est de la population inuk, la quantité de même que la qualité des données démographiques ne peuvent être qu'augmentées suite à la Convention. Nous sommes tous conscients que les listes administratives ("disc lists") dont nous disposions jusqu'à présent comme source de données démographiques étaient un instrument très imparfait. D'autre part, le registre des Inuit mis sur pied par l'Université de Montréal, et constitué à partir des actes d'état civil est resté incomplet jusqu'à ce jour dans le mesure où d'une part la population n'a pas encore d'acte de naissance (en particulier les personnes âgées) et d'autre part les

événements ne sont pas tous enregistrés.

Toutefois, il faut bien réaliser que la constitution de registres pour les Inuit et les Cris du Québec ne permettra d'améliorer les données de façon à effectuer des recherches démographiques que si les registres ne sont pas uniquement conçus à des fins administratives pour répondre aux exigences de la Convention. La Commission d'inscription responsable de la création des régistres devrait donc s'assurer les services d'experts démographes pour la conseiller dans la création des formulaires d'inscription et de mise à jour, ainsi que dans le montage même des registres et des fichiers informatisés qui les accompagneront sans doute. Ce n'est que de cette manière que le travail imposant de constituer et de tenir ces registres pourra servir à la fois à des fins d'administration et de recherche.

l'actuel "Registre des Indiens" du MAIN est un exemple de registre constitué d'abord et avant tout pour se conformer à la Loi sur les Indiens dans une optique purement administrative. Le registre n'ayant pas été pensé en fonction de l'analyse démographique, le chercheur qui veut exploiter ce registre se heurte à de nombreuses difficultés. A titre d'exemple, l'analyse de la fécondité est de beaucoup limitée du fait que le dossier d'une femme ne fournit pas le nombre de ses enfants nés vivants et qu'un enregistrement de naissance ne donne pas le rang de la naissance. Quant à l'étude de la nuptialité, l'enregistrement de mariage ne fournit pas l'état matrimonial des conjoints au moment du mariage. On pourrait ainsi continuer à énumérer des lacunes dans le système d'enregistrement actuel des données pour les Indiens.

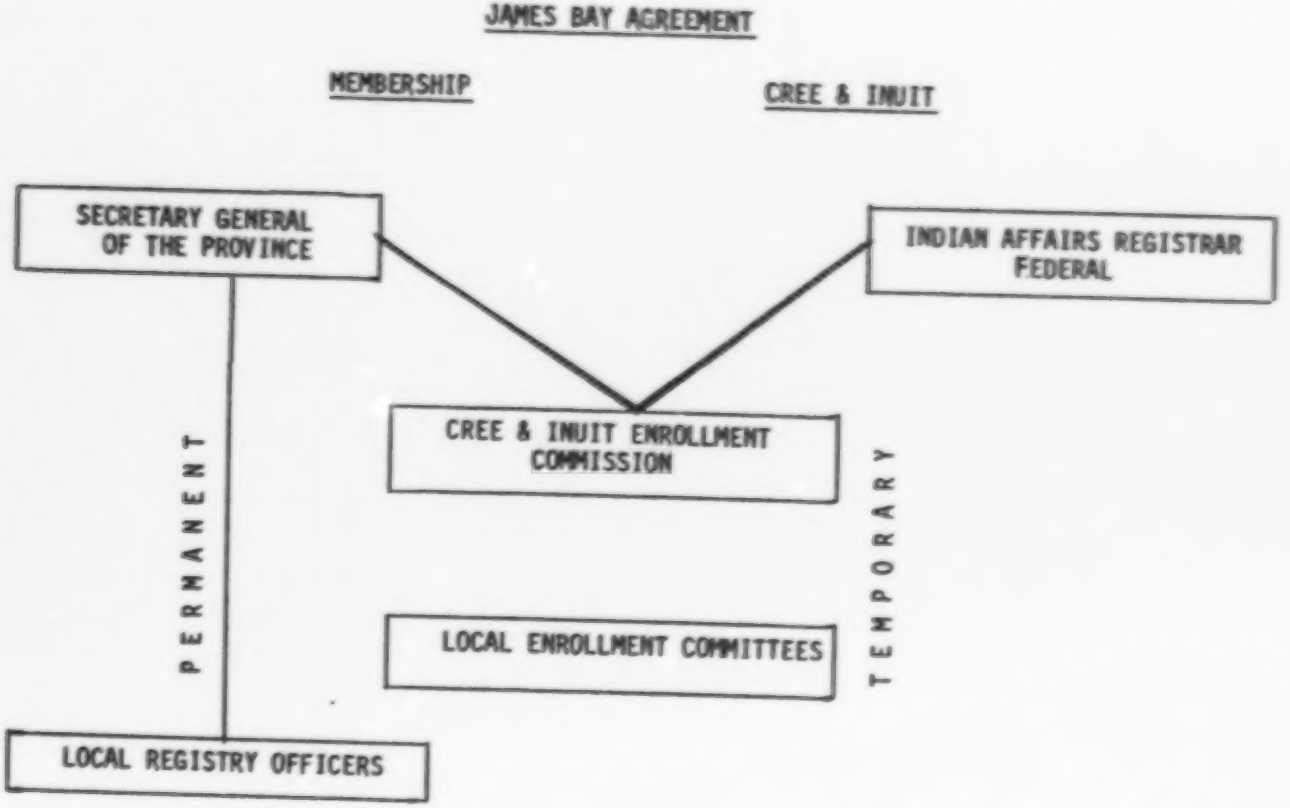
Si la mise sur pied d'un registre complet des Inuit apparaît au premier abord comme un élément net de progrès dans la collecte des données démographiques dans le Nord, la création d'un second registre pour les Cris pourra amener plusiers confusions. En effet, d'après les termes de la Convention, le MAIN doit continuer à maintenir le Registre des Indiens cris, particulièrement aux fins des exemptions fiscales prévues dans la Loi sur les Indiens.

Ainsi donc la plupart des Cris seront inscrits sur deux registres à la fois. Toutefois, ces deux registres ne seront pas identiques au départ et s'éloigneront de plus en plus l'un de l'autre avec le temps. Alors que

les Cris sans statut, ainsi que leurs descendants, ont droit d'être inscrits au registre des Cris du Québec, ils continueront d'être exclus du registre fédéral des Indiens. Alors que les femmes cries qui épouseront des non-Indiens perdront leur statut et que ni elles ni leurs enfants à naître n'auront droit d'être inscrits au registre fédéral, ces mêmes femmes et leurs enfants seront inscrits au registre provincial. A l'inverse, une non-Indienne qui épousera un Cri continuera d'être inscrite au registre fédéral, mais elle ne sera pas inscrite au registre provincial. Les deux registres ne couvriront donc pas la même population et ils deviendront d'autant plus différents que les mariages inter-raciaux seront nombreux.

CONCLUSION

Une révision complète du système de collecte et de conservation des données sur la population autochtone du nord du Québec s'effectue, suite à la Convention de la Baie James. Cette révision devrait donner lieu à une amélioration de la qualité de l'information recueillie durant les prochaines années. Cependant des recommandations de la part d'organismes de recherche devraient être faites dès maintenant auprès de la Commission d'inscription afin que les registres de population crie et inuk soient conçus non seulement comme des outils de contrôle administratif et légal mais aussi comme des instruments en vue de la recherche démographique.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MEMBERSHIP
CREE & INUIT
SECRETARY GENERAL OF THE PROVINCE
INDIAN AFFAIRS REGISTRAR FEDERAL
CREE & INUIT ENROLLMENT COMMISSION
PERMANENT
TEMPORARY
LOCAL ENROLLMENT COMMITTEES
LOCAL REGISTRY OFFICERS

NORTHERN POPULATION WORKSHOP I

OBJECTIVE II
DAY II

To review:

demographical research now being undertaken to determine areas of overlap and/or neglect;

the relevance of existing research; and

the possibility of a more planned approach to northern demographical research among government and non-government agencies working in this field.

CHAIRMAN: Dr. R. M. Bone

A FRAMEWORK FOR DEMOGRAPHIC RESEARCH ON THE NORTH

Un plan pour une recherche démographique du nord

ANDREW J. SIGGNER[1]

ABSTRACT. - An ecological framework is proposed within which demographic research may be conducted by various departments of the Federal and Territorial Governments, and by non-governmental research institutes. An overview of the demographic studies carried out by the Northern Affairs and Indian and Eskimo Affairs Programs will form part of the proposed research framework to identify, in a systematic fashion, what has been done, what objectives these studies are meeting and how they are being used. A population projection model employed to forecast the Registered Indian population and how its use by policy-makers and planners to identify program and policy issues is also described in detail.

It is proposed to use the research framework to identify gaps in our demographic knowledge of the North, taking into account present, as well as anticipated, economic, sociological and environmental changes and issues in the area.

RESUME. - L'auteur propose un plan écologique dans le cadre duquel les différentes branches des gouvernements fédéral et territorial et les instituts de recherche non gouvernementaux pourraient procéder à une recherche démographique. Une revue générale des études démographiques effectuées par les Affaires Nordiques et les Programmes des Affaires Indiennes et Esquimaudes formera une partie de ce plan de recherche proposé par l'auteur. Son but, par là, est d'établir d'une façon systématique ce qui a été accompli, quels objectifs ces études atteignent, et comment elles sont utilisées. Vient ensuite aussi, une description détaillée d'un modèle de projection qui permet de prévoir la population indienne enregistrée

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et son utilisation par les concepteurs de politique de population et les planificateurs.

L'auteur propose l'utilisation de ce plan de recherche pour déterminer les trous qui existent dans nos connaissances démographiques du Nord, en tenant compte des changements et problèmes économiques, sociologiques et d'environnement qui se présentent dans cette région, changements et problèmes actuels et anticipés.

INTRODUCTION

Most of the recent demographic studies conducted by the Department of Indian Affairs and Northern Development appear to have focused on the forecasting of population changes resulting from impending technological changes such as the building of a pipeline, etc. They have tended to concentrate on the demand and the supply of labour, and on whether the resident population would have the skills and numbers required to meet these changes.

To identify the gaps in demographic knowledge of the North, the studies conducted have been presented and distributed into the various components of a theoretical framework developed by Otis Dudley Duncan (1959) known as "the ecological complex". This complex is made up of four interacting components: Population, Organization, Environment and Technology (P.O.E.T.) Given the delicate balance that exists among these four components in the North, this framework presents a relevant classification scheme, within which to examine existing demographic research, as well as to point out a direction for future research.

THE CLASSIFICATION SCHEME

The "ecological complex" or P.O.E.T. system "constitutes an equilibrium-seeking system whose path of change results from this tendency (to seek equilibrium) combined with the dislocating forces impinging upon one or another point in the system" (Duncan, 1959). Its four elements are identified as: Organization, Population, Environment and Technology (Fig. 1), and the lines running between these four elements are meant to suggest their "functional interdependence" with one another.

ORGANIZATION

ENVIRONMENT TECHNOLOGY

POPULATION

Fig. 1 - The ecological complex

We have, therefore, a dynamic system where each element can be the agent for change and can be affected by changes in any one of the other elements.

What are the agents of change?

There are several, but it is suggested that the element with the greatest propensity for being a "dislocating force" is the Organization element. Duncan (1959) describes it as representing "an adaptation to the unavoidable circumstances that individuals are interdependent and that the collectivity must cope with concrete environmental conditions - including competition and resistance afforded by other collectivities - with whatever technological means may be at its disposal". This could be expanded to include other than just technological resources, i.e., political and legal means as well as the media.

What are the collectivities competing over?

It is assumed they are competing over the degree of influence they will have on the policy-making process and each collectivity has different means at its disposal with which to compete in this process. A hierarchical multi-dimensional complex of competing collectivities could therefore be developed which would not remain static even as some of the collectivities gain more influence in the process over time: an example of this would be a native land claim settlement which gave a certain group more control over the land and its use than it had had before the settlement.

When issues or problems arise they are generally of two types: (1) those which are created outside the specific ecological complex to be affected by the proposed solutions, and (2) those which may be created when the ecological elements within the specific ecosystem are out of phase. An example of the former is the need to increase Canada's domestic supply of oil and natural gas in the face of rising import costs, and to locate and bring these resources to market. Geographic areas are therefore, sought and identified as providing potential solutions to the problem, e.g. the Mackenzie River delta and valley. Examples of the latter would be the issues or problems created once a refinery or pipeline is in place. Can the environment cope with the increased population required to support the construction of a pipeline? Is the resident population sufficiently large and skilled enough to support the labour demand?

Once the issues have been identified, a competing collectivity, such as the Department of Indian Affairs and Northern Development, will generally engage researchers, of different disciplines, in various stages of the policy-making process. Two stages in the policy-making process in which research is conducted are the *Analysis* stage and the *Review and Evaluation* stage. In the *Analysis* stage, research is often of the "impact study" type, where researchers identify the problem areas and a range of solutions associated with an issue. This form of research tends to examine the interactions of two or more elements in the P.O.E.T. system. The *Review and Evaluation* stage, on the other hand, involves research which monitors existing conditions in the P.O.E.T. elements, often separately, or which examines the effects that policy decisions have had on the elements in

the P.O.E.T. system. This type of research is generally of a descriptive nature, identifying historical trends or base line conditions before any major changes occur to the unit of analysis - a community, for example.

Population studies carried out by the Department of Indian and Northern Development (DIAND) in this bibliography which since 1969 (Castonguay, 1976) have been classified as follows, (a) where they fit into the policy-making process; at the analysis stage or the review and evaluation stage; (b) what elements of the P.O.E.T., if any, are examined in addition to the Population element; and (c) what the objectives of the study are (Table 1).

Traditionally, demographic variables have been analysed as dependent variables, i.e., assessing the impact of changes in technology, organization and environment on demographic processes and composition. However, they may be viewed also as independent variables, determinants or limiting conditions with respect to the degree of change in the other elements of the ecological complex. For each study under review the direction of the relationship is indicated in Table 1 under the Objectives column (Table 1) if such a relationship is analysed.

THE RESULTS

From Table 1 two major types of demographic analyses can be identified. Prior to the formalization of specific pipeline proposals for the North, the type of demographic studies conducted by the Northern Affairs Program focused primarily on population and labour force estimates and projections. None of these really took into account, in a systematic manner, the potential policy issues which would affect the populations through changes in technology, organization and environment. Most of the studies tended to analyse population change and composition separately from the other elements in the P.O.E.T. system. One which stands out as an exception, C.M. Lu's "A Study of Health in the Northwest Territories" (1972), looked at changing health conditions by ethnic group and related these changes (which include fertility and mortality by cause) to health services and facilities.

As the need to tap resources of the North to meet national requirements became a policy issue, DIAND realized the necessity to analyse whether the resident population could supply the anticipated demand for labour, in terms of numbers and skills and ethnic group. A number of demographic forecasts were prepared to see just what size and type of labour force would be required to support drilling and pipeline development (see Table 1: Petrie, 1974; Manders, 1973; Data Management Section, 1974; Meldrum, 1975; Environmental-Social Program, 1974).

In the last two years, however, the studies have also focused on the impact of technological change on various population groups in the areas affected by future resource development. The studies by Stager, 1974, the Environmental-Social Program, 1974 and the Pipeline Application and Assessment Group, 1974, (Table 1), look at not only the impact on the population and labour force, but also on the environment. The Stager study stands out as a good example of an in-depth analysis of an Indian community located in Old Crow, Yukon. It examines the historical relationship of the people to the land, their social organization and their attitudes towards the changes that will affect their way of life as a result of the new pipeline development. While the study concludes that the people are generally in favour of the benefits that will accrue to them, concern is also expressed by the community over the route the pipeline will take and the serious effects upon their hunting and trapping areas and, hence, their environment.

Another study which stands out is that carried out by the Economic Staff Group and M.P.S. Associates (Table 1) which examines to what extent the native population can and will participate in pipeline related activities. Here the population is analysed as a determinant in relation to changing technology in the Mackenzie region.

The bulk of demographic studies have, in previous years, tended to address questions of population and labour force growth especially by ethnic group, since a major policy objective of the Northern Program is to promote economic development in the North, particularly among native northerners. However, with the pipeline proposals a number of studies have begun to focus on analysing these populations in relation to the other elements in

the P.O.E.T. system so that economic development is now being examined in a more comprehensive and systematic manner. Presumably these analyses will provide various policy-makers with greater knowledge of what the implications or consequences of their decisions could be.

GAPS IN EXISTING DEMOGRAPHIC RESEARCH

A number of serious gaps occur in the demographic processes and composition of the populations in the North. The first concerns migration. A dearth of information exists on the size and direction of migration flows into, out of, and within, the North. As well, little is known of the frequency of mobility, duration of residence of migrants moving to and from the North and between Northern communities. Some work has been done on the socio-economic and demographic composition of migrants into and within the North (Kuo and Lu, 1975), but no systematic analysis has been done to link the composition of these migration streams with the "push and pull" factors at the origins and destinations of these streams. Such work is critical given the anticipated resource development activity in the North.

With respect to DIAND policy objectives concerning the improvement of social and economic conditions among the native peoples, there is a need, from a demographic point of view, to evaluate and review changes in mortality by cause, in fertility, age and sex composition in relation to the technological revolution, and to the environmental and organizational changes occurring in the North. These demographic variables can be used as valuable indicators in assessing the social benefits and the cost to the native people of changes in other elements of the P.O.E.T. system.

As noted, many of the demographic studies in the Northern Affairs Program have concentrated on the development of population and labour force projection models. These models are valuable for policy-makers and planners, and such studies are necessary. However, considerable analysis is also required on the rationale underlying the assumptions on the demographic processes affecting each ethnic group in the North, if these assumptions are to be used effectively in a projection model. Perhaps, as better data information systems are devised, consideration should be given to developing simulation models for the North in order to

provide policy-makers with a series of futures based on a range of assumptions, in order to anticipate the impact of existing policies on future populations of varying size and composition. Such models may also point out new policy issues.

An example of this was a study prepared by the writer last year, in which the Registered Indian population in the active age group 15 to 64 was projected from 1975 to the year 2000. This study not only provided policy-makers and planners with the future size and growth based on certain assumptions of mortality and fertility, but it also focused on potential issues that could affect policy-making and planning. For example, as a result of a "baby boom" in the Status Indian population during the latter part of the nineteen sixties, these children can be expected to begin entering the active population in large numbers between 1980 and 1985, increasing the total active population by 41 per cent between 1975 and 1985. This has raised a number of short-term issues relating to the economic development programs of the Indian Affairs Program, e.g. how much employment can be generated to accommodate this growth? It has also raised questions about the expected growth in social and welfare assistance, etc. The Indian populations in the Mackenzie and Yukon regions also have the same type of age-sex structures which will generate these policy and planning issues over the next ten years.

CONCLUSIONS

It is evident that demographers, human ecologists and others interested in population analysis of the North can no longer divorce their analyses from the ecological complexity of this region of Canada. Future demographic research will have to give careful consideration to the interactions of population with organization, environment and technology. Policy makers and planners require a solid understanding of the demographic processes, not only as separate units of growth, but also as integral components of the dynamic ecosystem in the North, where population size and growth are both a consequence and determinant of change. Departmental demographic studies have been tied into the proposed ecological framework in order to identify on what elements in the P.O.E.T. system these studies have concentrated. Some gaps in present knowledge have also been pinpointed, especially in the vital demographic process of migration. This component will undoubtedly be an important policy instrument, as resource development expands in the North, in meeting the demands for future growth in the labour force and population as a whole.

TABLE 1 - D.I.A.N.D. DEMOGRAPHIC STUDIES IN AN ECOLOGICAL FRAMEWORK FOR RESEARCH

STUDY/AUTHOR/YEAR	POLICY-MAKING STAGE		ELEMENTS IN P.O.E.T. SYSTEM				OBJECTIVES OF STUDY
	Analysis	Review & Evaluation	Population	Organization	Environment	Technology	
Population Projections of the Northwest Territories to 1981 - C.M. Lu and D.C. Mathewin, 1974	X		X				To provide policy-makers and planners with a general set of projections, based on assumptions of fertility, mortality and net migration by age, sex and ethnic group. It is not a policy-specific study, but based on historical trends in population growth in N.W.T.
Population Projection of the Yukon Territory to 1981 - C.M. Lu, 1975	X		X				- Same as above re: Yukon Territory.
A Study of Migration Behaviour in the Mackenzie District of Northern Canada - C.Y. Kuo and C.M. Lu, 1975		X	X				- An attempt to assess the probability of moving into or within the Mackenzie District based on various socio-economic characteristics of the migrants; no attempt is made to systematically assess the impact of economic development at specific locations on migration patterns. (Variables studied: ethnic group, age, sex, income, occupation, education).
The Supply of and Demand for Labour in the Yukon and Northwest Territories D.C. Mathewin and M. Lafrènience, 1971		X	X				To point out further research questions related to future labour supply and demand. The projections are not linked to any specific policy issues nor any other elements in the P.O.E.T. system (Variables studied: ethnic group, age, sex).

TABLE 1 - D.I.A.N.D. DEMOGRAPHIC STUDIES IN AN ECOLOGICAL FRAMEWORK FOR RESEARCH

STUDY/AUTHOR/YEAR	POLICY-MAKING STAGE		ELEMENTS IN P.O.E.T. SYSTEM				OBJECTIVES OF STUDY
	Analysis	Review & Evaluation	Population	Organization	Environment	Technology	
Northwest Territories Indian and Eskimo Population, Specific Groups, Projected Under Varying Assumptions of Migration D.C. Mathurin		X	X				The first in a series of population projections of the native people in the N.W.T. The projections were not related to any other elements in the P.O.E.T. system or specific policy issues. (Variables studied: ethnic group, age, sex).
Regional Socio-Economic Overview Study - Yukon Territory E. Thibault, 1975		X	X				The study provides some background demographic information and indicates areas for further research. (Variables studied: age, sex, ethnic group).
Total Employment Estimates for The Yukon and Northwest Territories, 1967 1968 and 1970 G. Mauzeroll, 1973		X	X				To present measures of total employment for the Yukon and N.W.T. (Variables studied: ethnic group, age, sex, labour force size).
Economic Analysis of Human Resources of the Keewatin Region, N.W.T. - Based on Data Collected by the Keewatin Manpower Survey, January, 1969 D.F. Preston, 1969		X	X				This study assesses future demand for employment as a result of changing technology in the North, e.g., petroleum, transportation developments, etc. It forecasts future supply of the native labour force in terms of size and skills and relates the findings to the policy guidelines established by Cabinet for the 1970's on Northern Employment Guidelines. (Variables studied: ethnic group, labour force size, skills, industry, occupation)

TABLE 1 - D.I.A.N.D. DEMOGRAPHIC STUDIES IN AN ECOLOGICAL FRAMEWORK FOR RESEARCH

STUDY/AUTHOR/YEAR	POLICY-MAKING STAGE		ELEMENTS IN P.O.E.T. SYSTEM				OBJECTIVES OF STUDY
	Analysis	Review & Evaluation	Population	Organization	Environment	Technology	
Regional Impact of a Northern Gas Pipeline, Vol. 6 - Impact of Pipelines on Territorial Population, Labour Force Employment and Income - Economic Staff Group and M.P.S. Associates, 1974	X		X			X	A good example of a study which examines Population as a constraint or limitation in relation to changing technology in the Mackenzie pipeline region. Native peoples' direct or indirect participation in pipeline activities are assessed. (Variables studied: ethnic group, age, sex, propensity to migrate, labour force activity, skill levels, income).
An Evaluation of the Economic Impact of the Mackenzie Valley Gas Pipeline on the Northwest Territories P. Manders, 1973	X		X			X	Another labour supply and demand forecast as it relates to the Mackenzie pipeline policy issue. (Variables studied: labour force, income).
Assessment of Northern Native Male Labour Force Potential in the Mackenzie Valley Pipeline Corridor - Data Management Section, 1974		X	X			X	Reviews existing data sources on labour force potential to 1981 in the pipeline corridor. (Variables studied: labour force, income).
Assessment of Northern Native Male Labour Force Potential in the Rest of the Mackenzie - Data Management Section, 1974		X	X				Same as above study.
Territorial Employment Record and Information System - S.M. Maldrum, 1975.		X					Discusses a labour force and employment information system, its design and testing, in response to the need for current and comprehensive data on the Mackenzie Valley potential labour force. (Variables studied: labour force, ethnic group, skill levels, age, sex).

TABLE 1 - D.I.A.N.D. DEMOGRAPHIC STUDIES IN AN ECOLOGICAL FRAMEWORK FOR RESEARCH

STUDY/AUTHOR/YEAR	POLICY-MAKING STAGE		ELEMENTS IN P.O.E.T. SYSTEM				OBJECTIVES OF STUDY
	Analysis	Review & Evaluation	Population	Organization	Environment	Technology	
"Affirmative Action Program": The Suitability of a Quota System as a Policy toward the Integration of the Natives of Canada, North of the 60th Parallel - R. Chenier		X	X	X			A good example of a study that assesses the impact of a policy decision that employers in the North hire a certain percentage of native people; changes in technology and hence in the economic and social well-being of native people. These changes do not necessarily lead to a change in attitude or behaviour in fertility levels. Although this point requires further research. (Variables studied: size and growth, cultural attitudes and behaviour).
Old Crow, Y.T. and the Proposed Northern Gas Pipeline - J.K. Stager, 1974	X		X	X	X	X	A extremely good approach to the impact of technological change via a pipeline on the population, social organization and environment and their interactions in Old Crow, Yukon. A cost-benefit approach is used to arrive at a conclusion as to how the people of Old Crow will react to a pipeline being built in the area of their community. (Variables studied: ethnic group, age, sex, household size, marital status, education, employment).
Mackenzie Valley, Northern Yukon Pipelines - Environmental - Social Program, 1974	X		X	X	X	X	An impact study of the potential effects of the proposed pipelines on population, environment and organization. Mostly a background document re:population. (Variables studied: fertility, mortality, age, sex, education, labour force).

TABLE 1 - D.I.A.N.D. DEMOGRAPHIC STUDIES IN AN ECOLOGICAL FRAMEWORK FOR RESEARCH

STUDY/AUTHOR/YEAR	POLICY-MAKING STAGE		ELEMENTS IN P.O.E.T. SYSTEM				OBJECTIVES OF STUDY
	Analysis	Review & Evaluation	Population	Organization	Environment	Technology	
Mackenzie Valley Pipeline Assessment - Environmental and Socio-Economic Effects of the Proposed Arctic Gas Pipeline on N.W.T. and Yukon - Pipeline Application and Assessment Group, 1974	X		X	X		X	Another impact study examining the effect of the proposed pipeline on the population, environment and social organization or economy of the region.

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CAN WE MAKE BETTER USE OF EXISTING DATA? A NORTHERN SASKATCHEWAN EXPERIMENT

JOHN BEVERIDGE[1]

It is widely recognized that one of the major problems, if not the major problem, in conducting quality demographic research in northern areas today, is the inadequacy of the existing database. The pre-aggregated statistics generally known and available (e.g. census tabulations) have serious shortcomings for comprehensive demographic research, and these shortcomings are generally more severe in northern areas. It is not the intention in this paper to discourage further use of census data for demographic research, or to discourage efforts to improve the quality of census data in the north. However, it is suggested that alternative data sources presently exist which, if effectively utilized, are not only more reliable and useful for some kinds of demographic research, but may enable much research of an extremely valuable nature to be carried out which has previously been impractical or impossible. This paper describes one fairly large-scale effort undertaken in northern Saskatchewan to effectively utilize these alternative data sources - the Northern Saskatchewan Information System Project. The Project confirmed the tremendous potential of government records for applied research and other applications. It also demonstrated the extensive amount of "dirty work" required with each data series before it could be effectively utilized. Finally, it demonstrated the importance of a simple yet flexible information retrieval and analysis system employing stringent confidentiality safeguards.

INTRODUCTION

There is little doubt that accurate, up-to-date and meaningful information about the population of the North is essential to deal with the tremendous problems facing the people of this area. Demographic characteristics and processes of a region are closely inter-related with the social, cultural, economic, technological and political

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changes (planned and unplanned) taking place within the region. At the most basic level, information has, therefore, to ensure provision of facilities and services at an acceptable level for the present population of a region or community, and in some cases for particular ethnic and age groups within the region or community. Similarly, planning and budgeting for future programmes and facilities require a rational basis for anticipating population growth and mobility, and changes in population composition. A related application of basic population data is in programme evaluation, as indicators of programme performance or effectiveness are meaningless without reference to the target population of the particular programme. It is, therefore, essential for government officials to give full consideration to demographic factors in all programme management, planning , evaluation and research activiites if these efforts are to result in more appropriate and effective services.

To provide this kind of information, an adequate demograpnic database. is required. Traditionally, there has been a heavy reliance upon Statistics Canada to provide demographic statistics, derived primarily from Census data. In recent years, however, there has been increased recognition among both demographers and government administrators that the Census is not always the most suitable means of producing data for regional planning and administration purposes. The five-year interval between enumerations is the most obvious limitation: current data are frequently unavailable and intercensal estimates are unreliable for regions with a small and rapidly-changing population. There are other limitations to census data as well. One-shot enumerations have no cumulative corrective mechanisms to gradually eliminate the inevitable inaccuracies and omissions. Classification categories are a compromise for all Canada and are often inappropriate for specific geographic regions (where distinctions between different groups of natives, for example, are important). Aggregation procedures limit the individual-level and community-level analyses which can be conducted and prohibit longitudinal analyses at these levels altogether. These are only a few of the weaknesses of Census data for planning and administration applications,[1] weaknesses which tend to be more severe in northern areas.

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[1] For a more complete assessment of the problems in using census data with specific reference to northern areas, see for example R.M. Bone and T. Foster "Northern Population Series, Report 1: An Assessment of Census and Other Data at the Census Division Level (Saskatoon, Saskatchewan: Institute for Northern Studies, 1976) and J. Beveridge, J. Boyd and K. Hodgson "Northern Saskatchewan Information System - Preliminary Design and Development, Volume Two - Database Design: Demographic Characteristics (Saskatoon, Saskatchewan: Institute for Northern Studies, 1975). Many of the other papers presented at this Workshop stress similar problems.

Fortunately, alternate data collection and processing systems exist which, while not specifically designed for the production of demographic statistics, can often be adapted to this purpose with highly satisfactory results. These are the administrative record-keeping systems maintained by numerous government departments and agencies. Computer registration systems for government health care plans are particularly well-suited for this purpose. They are usually updated and corrected on a more or less continuous basis, not only providing data which are up-to-date at any given time, but allowing for a gradual cumulative improvement in data quality to permit of a much higher level of accuracy and reliability than otherwise possible. The individual-level storage necessary for the original accounting functions of these systems also eliminates the classification and aggregation problems of Statistics Canada procedures.

There are, of course, problems associated with using administrative record-keeping systems for research purposes. Each such system is designed with a specific purpose in mind, often related to a financial function of some kind. Considerable effort is often required to adapt such a system for research purposes, as it often maintains current data only and certain data vital for longitudinal analysis are destroyed in the update process, or after the intended function has been accomplished. Some record-keeping systems are extremely unsophisticated and very inefficient for use without modification. Access is often restricted or problematic to individuals or agencies not involved with the original function of the system. There are further problems associated with the use of several administrative record-keeping systems in an integrated manner. Individual systems are frequently incompatible with each other in terms of units, boundaries, time periods, etc., and spacially separate storage compounds the problem.

In addition to the more or less technical problems noted above, there is a general ignorance of the availability and content of these alternate data sources among the very agencies which could use them to advantage, and of the technical and political difficulties in utilizing them effectively. Finally, and perhaps most important, there is the problem of confidentiality. Because of disaggregated data storage, individuals are at least potentially identifiable. This is both an ethical and a practical problem and requires a great deal of effort to overcome.

Despite these significant problems, however, there are powerful reasons for attempting to use more effectively the vast quantity of existing data maintained in administrative record-keeping systems. The present situation regarding the use of these record-keeping systems, however, is far from ideal. There appears to be a polarization of effort. On the one hand, there are massive investments in data collection and processing activities and in system maintenance. On the other hand, there are frequent costly and hurried attempts to "make the best" of the standard output from these systems, output which is usually ill-suited to research purposes. Almost no effort has thus far been devoted to the intermediate task of systematically investigating and evaluating existing files, assessing their quality and suitability for research applications, and, if necessary, adapting and integrating them for these applications. Admittedly, this work is time-consuming and tedious, and usually regarded as "dirty work", but necessary just the same. If it is not undertaken, continued under-utilization of valuable data and wasteage of effort and funds are to be expected. Research will continue to be inadequate, because critical data are not employed or employed ineffectively, and this inadequacy will be reflected in programme planning, management and evaluation activities.

The intention in this paper is to illustrate what can be done to improve this general situation by referring to a project recently undertaken in northern Saskatchewan. The Northern Saskatchewan Information System project is by no means limited to demographic data alone, but many of the findings of that project do bear directly or indirectly upon demographic research. Like most pioneering projects, it has not been totally successful, but the problems encountered and the measures developed to deal with these problems may be helpful to those undertaking similar work elsewhere. In any case, a great deal has been accomplished which has not apparently been accomplished elsewhere, partially due to a rather unique situation, but primarily to a considerable amount of tedious and generally unpleasant work, and a lot of patience, with perhaps a touch of imagination.[2]

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[2] For a full account of the project refer to "Northern Saskatchewan Information System - Preliminary Design and Development, Vols. 1-5" - Institute for Northern Studies, Saskatoon, Saskatchewan, 1975.

BACKGROUND

As is frequently the case, the circumstances which made the Northern Saskatchewan Information System project both possible and necessary were created by a political change. Prior to 1972, the sparsely-populated northern portion of Saskatchewan (containing approximately 22,000 inhabitants, mostly native, spread over 46 isolated or semi-isolated settlements) was served by the same provincial government departments which served southern portions of the province (Public Health, Education, Social Services, Natural Resources, etc.). A concern arose that because of the unique problems and circumstances in the north, traditional forms of service delivery were not adequately meeting the needs of the area. (This concern has recently arisen in other provinces as well, and various means of coping with the situation have been attempted.) The step taken in Northern Saskatchewan was the formation of a new agency, the Department of Northern Saskatchewan, located physically in the north to deal specifically with the problems of the Northern Administration District (Fig. 1.). The Department of Northern Saskatchewan had essentially two types of responsibilities. Firstly, it was responsible for the delivery of traditional government services (health, education, social services, etc.) in the area, and for the adaptation of these services to reflect the particular requirements of northern communities. Secondly, it was responsible for a special category of programmes in the area of economic, social and political development aimed at reducing the disparities between northern and southern Saskatchewan, with minimal disruption of existing cultural values. The information implications of these responsibilities became all too obvious. The Department had inherited fragments of information systems from "parent" departments which, like the previous programmes in the area, had been developed for southern circumstances, ill-suited for the north. To further complicate matters, the various record-keeping systems were separately located south in Prince Albert or Regina; were usually incompatible with each other; were often inaccessible; and were generally useless to northern decision-makers. A crucial problem was that existing information was almost never available on a community basis. Clearly, the existing record-keeping systems in unmodified form were inadequate even to manage and co-ordinate traditional programmes, let alone to assess social and economic problems, to plan new programmes to deal with these problems, to manage these programmes on a day-to-day basis, and to evaluate their effectiveness.

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Fig. 1.

The obvious requirement was some means of providing the decision-maker, whether programme manager, planner or researcher, with complete, accurate and up-to-date information in the required subject area, when required, and in a convenient and usable form - in other words, a comprehensive and integrated information system and database. The only alternative was to try to get by in a somewhat haphazard fashion, conducting crisis-oriented information collection activities, costly one-shot efforts with no application beyond the immediate intended purpose. A decision was made, therefore, to proceed with the design and development of an integrated information system. Considering the scope of the project and the prohibitive cost of introducing new data collection and processing procedures in each subject area, a central design guideline was that maximum use be made of existing data series.

THE PROJECT

The basic system design and development procedure employed in the Northern Saskatchewan Information System project was in theory fairly straightforward, as illustrated in Fig. 2. In practice, of course, it was not nearly so. The programme responsibilities of the Department of Northern Saskatchewan were extensive, encompassing not only most of the services provided elsewhere by all departments of the provincial government combined, but several unique programme areas as well. The scope of the information system design task had to be correspondingly broad. In addition, many of these programme responsibilities were as yet rather poorly defined (understandably so, since efforts were being made to adapt traditional government programmes to the special requirements and circumstances of northern Saskatchewan, and to develop and implement new programmes specifically to deal with some of the more serious problems of the area), and were constantly changing. As a result, the task of specifying information requirements was a difficult one; indeed, it became clear that the information system itself would eventually be required to assist with defining and modifying programme responsibilities. As for the quality of existing information pertaining to northern Saskatchewan, most files were found to be seriously incomplete, inaccurate and outdated, and were stored and organized in such a way as to render their use difficult or impossible. Primary information collection procedures employed in the area were often haphazard and usually inconsistent (again understandable under the difficult conditions existing for these activities). Consequently,

INFORMATION SYSTEM DESIGN AND DEVELOPMENT

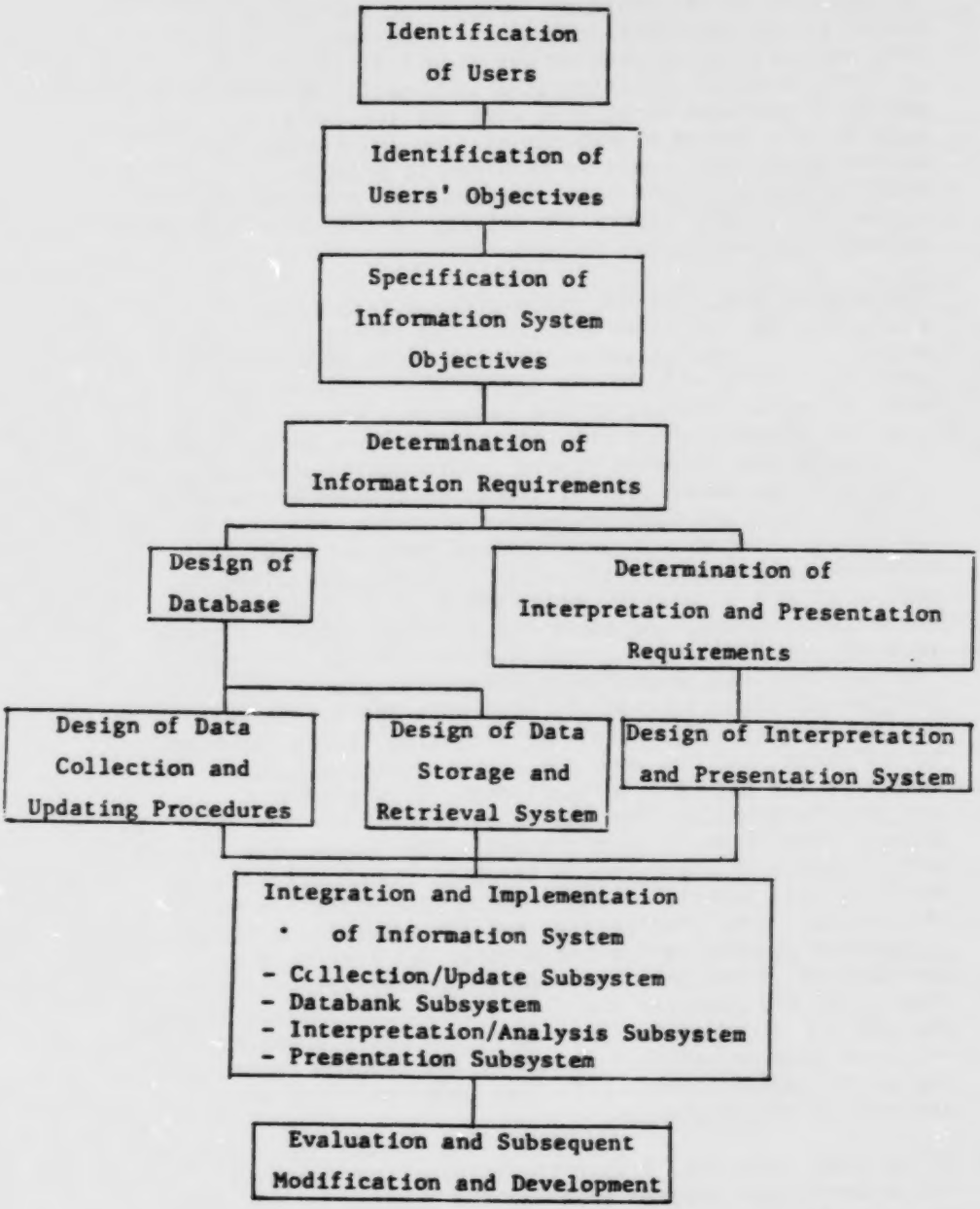
Identification of Users
Identification of Users' Objectives
Specification of Information System Objectives
Determination of Information Requirements
Design of Database
Determination of Interpretation and Presentation Requirements
Design of Data Collection and Updating Procedures
Design of Data Storage and Retrieval System
Design of Interpretation and Presentation System
Integration and Implementation of Information System
- Collection/Update Subsystem
- Databank Subsystem
- Interpretation/Analysis Subsystem
- Presentation Subsystem
Evaluation and Subsequent Modification and Development

Figure 2.

a great deal of work at the local level was required to make many of the existing information sources at all useful to northern Saskatchewan decision-makers. The data confidentiality problem was also a difficult one, as suitable models of integrated information systems employing adequate safeguards were not available. A considerable degree of experimentation and pioneering system design work would be required to produce a flexible and efficient data retrieval and presentation system which would ensure the privacy of individual northern Saskatchewan residents.

The program areas and the corresponding information topics which required attention are indicated in Fig. 3. For each program area, essentially three kinds of information were required to effectively carry out program management, planning, evaluation and research. First, information was required about the situation or problem with which the program was intended to deal: information about existing circumstances, about current trends or changes in these circumstances, and some projection of these changes into the future. Second, information was required about the services, programs and facilities currently operating to deal with this situation, about the program changes under way or anticipated, and about the expected nature of these services and facilities in the future. Third, information was required about the relationship between the program and the situation: in what ways and to what extent was the program influencing the situation it was intended to influence, and how were the changing circumstances affecting the nature or effectiveness of the program. It was this information that was to be crucial for the decision-maker, since it would form the basis for judging the overall effectiveness of a program in terms of its objectives, for deciding what aspects of the program were effective and what aspects were ineffective, and for determining those circumstances under which the program was effective or ineffective. With this knowledge, together with information about the expected changes in circumstances and about the various alternatives available, the decision-maker would be able to maintain or modify the program in such a way as to render it most effective under existing and anticipated circumstances.

It is clear from Fig. 3 that the information required for a particular program area was not limited to one topic alone. Effective health planning, for example, required information not only about health facilities and manpower and about mortality, morbidity and other health characteristics, but also about housing conditions, community

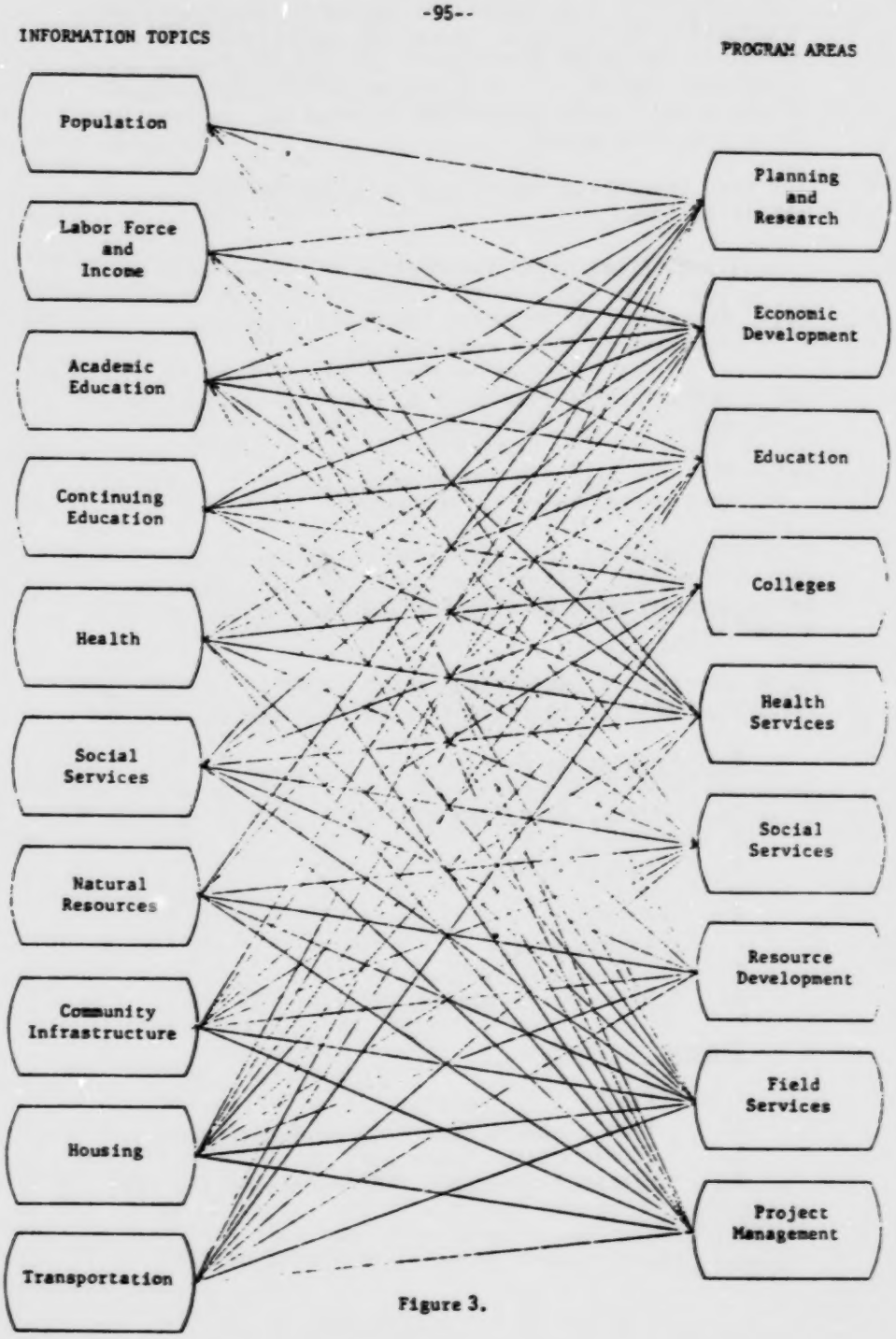
INFORMATION TOPICS
PROGRAM AREAS
Population
Labor Force and Income
Academic Education
Continuing Education
Health
Social Services
Natural Resources
Community Infrastructure
Housing
Transportation
Planning and Research
Economic Development
Education
Colleges
Health Services
Social Services
Resource Development
Field Services
Project Management

Figure 3.

infrastructure (e.g. water and sewage disposal systems), transportation services, education and literacy levels, and other topics of more direct concern to program areas other than health. It will not be surprising to demographers that basic population information was required for all program areas.

For each informtion topic, the database design procedure was as follows:

(1) Identification of Information Requirements;

(2) Assessment of existing information sources relevant to these requirements;

(3) Comparison of available to required information; and

(4) Plan for database development, employing existing data series where suitable.

This work resulted in a series of reference volumes, one section for each information topic, on which to base subsequent database development and implementation activities.

Using the topic of Population as an example, the following specification of data elements resulted from Step 1:

Base Population (northern Saskatchewan)

1. Individual I.D.
2. Family I.D.
3. Family status
4. Sex
5. Birthdate
6. Ethnic status
7. Language
8. Place of residence.

Changes in Above

1. Family I.D. (marriage)
2. Family status (marriage or independence)
3. Ethnic status (marriage)
4. Place of residence (inter-community migration)

Additions

1. Births
2. Immigration

Deletions

1. Deaths
2. Emigration

The next step was to investigate existing data series from which these data elements cmight be obtained on a regular basis.

The following data series were examined:

1. Saskatchewan Hospital Services Plan Master Registration File.

2. Census of Canada.

3. Registered Indian Band Lists.

4. Saskatchewan Vital Statistics Registration Records.

Although several other sources were initially investigated, only these four were considered potentially useful enough to warrant documentation.

The documentation format used for these data series (as well as for data series in other information topics) is outlined below:

1. Source
2. Content
3. Quantity of Data
4. Present Collection, Processing, Storage and Retrieval Procedure
5. Accessibility, Restrictions
6. Experimental Processing (undertaken by project staff)
7. Quality and Suitability
8. Recommendations for Utilizing

Additional information was included as necessary: a sample of the source document, the file format and code descriptions for computerized files, new file formats and descriptions for files modified or computerized by project staff, sample outputs, etc.

As a result of this investigation, the Saskatchewan Hospital Services Plan Master Registration File was judged to be the most complete and most accurate single source of population and identification available on northern Saskatchewan residents. This was due to a number of factors, including an efficient self-registration system, a substantial incentive for self-registration, a co-operative effort by several provincial and federal government agencies (as well as health and welfare personnel in the field) to achieve complete registration, and system links to the prime sources of birth and death inforamtion (hospital records and Vital Statistics registration records). The S.H.S.P. Master Registration File was also judged to be the most current source of population and identification data available, due to a more-or-less continuous updating process which effectively combined regular self-reporting procedures, routine input from hospital records and Vital Statistics registration records, and internally generated updates and linkages. (Also of importance was the feature that essential identification data were maintained in the updating process by means of cross-reference numbers).

In addition to meeting the criteria of completeness, accuracy and timeliness more successfully than the other data series, the Master Registration File had a number of other features which made it especially suitable for research and planning purposes. Of prime importance was the fact that data were stored in disaggregated form, allowing for individual-level and community-level analysis (whether pre-anticipated or not), and for longitudinal analysis at these levels. Further, maintaining individual-level data in the Master Registration File was not done at the expense of family composition information, which was also retained in the file by means of individual beneficiary numbers in conjunction with family unit registration numbers. Also, the Master Registration File contained enough basic identification data (name, address, sex, birth date, marital status) that with varying degrees of effort it could be matched with other datasets containing some of these data by family or individual. Thus the file could serve to prepare previously incompatible data series for individual-level analysis across files. (With a number of important health and welfare files, and with most files resulting from newly-initiated data collection activities, even this preliminary matching was not necessary since S.H.S.P. registration numbers were already being used as the key

reference numbers.) Not only was the S.H.S.P. Master Registration File a reliable source of demographic data, it was also useful for a much broader range of socio-economic research and planning. In terms of information system design, it was the ideal key identification file, permitting individual-level cross-file analysis in numerous subject areas while maintaining the confidentiality of individual records in all files used for such analysis[3]. One final attractive feature of the Master Registration File was its structure which made it relatively simple and inexpensive to access and transfer the relevant portion of the file for northern Saskatchewan research and planning purposes.

Not surprisingly, the S.G.S.P. Master Registration File, despite its virtues, was found to have a number of weaknesses which required attention before its full potential for research and planning applications could be realized. Its geocoding system was in itself inadequate for providing the required breakdown of information by individaul northern Saskatchewan communities. It was necessary to develop an alternative means to produce this breakdown. A more serious problem was the destruction of some previous data in the updating procedure, which prevented longitudinal analysis at the individual and community level. The construction and maintenance of a historical file was required to prevent this situation from continuing. Regarding data quality, the relatively higher proportion of births and deaths occurring out of hospital in northern regions provided some reliability problems, since deaths particularly were not consistently and immediately reported. However, the Master Registration File was considered more accurate than other sources in this regard, because of its continuous updating and purge procedures. Restricted access to the file by those with research and planning interests might be considered a problem, but certainly not a weakness. Since the file in raw form contains names and addresses of all beneficiaries, its use was of course restricted. To be granted access, it was necessary to clearly specify the intended uses of the data, and to strictly maintain confidentiality measures. Any group wishing to use administrative record-keeping systems containing individual-level data should expect similar conditions.

Census data were found to be generally unsuitable for incorporating into an integrated demographic database for reasons noted elsewhere in this paper, although recommendations were made for limited applications of census data.

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[3]The importance of stringent confidentiality safeguards in an information system with disaggregated data storage and cross-file analysis capabilities cannot be overstressed. This matter is discussed elsewhere in the paper.

The considerable range of demographic, housing and economic information derived from census data was simply not yet available from other more accurate and up-to-date sources, and census data were convenient for crude comparative studies with other regions in Canada. Vital Statistics records were found to be not directly required for a demographic database, because all the essential data from these records were incorporated into the S.H.S.P. Master Registration File, which was more convenient to use. The Registered Indian Band Lists had the obvious shortcoming that coverage was limited to registered Indians only (approximately one-third of the northern Saskatchewan population). Also, because of co-operation between the Department of Indian and Northern Affairs and S.H.S.P., data from the Band Lists were routinely incorporated into the S.H.S.P. updating process. As with Vital Statistics records, it was therefore possible to take advantage of this source indirectly through the more comprehensive S.H.S.P. Master Registration File. However, project staff found the Band Lists to be a necessary aid in interpreting S.H.S.P. residence data on treaty Indians for file modification purposes.

From the much-simplified account given above of the examination of existing data series realted to the demographic characteristics of the northern Saskatchewan population (Step 2 in the database design procedure), it is apparent that the final two steps were relatively straightforward. In the case of basic population data, almost all the required data elements were available from a single source - the S.H.S.P. Master Registration File. The one specified data element unavailable from this source was ethnic status.[4]

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[4]There is a conflict regarding the collection and utilization of ethnic or racial data. On the one hand, human rights oriented groups have pressed for the elimination of such practices on the grounds that they may facilitate or encourage discriminatory policies. As a result, some agencies formerly collecting ethnic and racial data, such as Saskatchewan Vital Statistics, have discontinued the practice. On the other hand, numerous federal and provincial government programs are designed specifically to provide differential benefits to members of ethnic or racial groups considered to be disadvantaged. Non-registered Indians and Metis currently benefit from a number of these programs. Clearly, if such programs are to continue, it is absurd to oppose the collection of the very data necessary to determine whether the programs are working effectively and whether improvements may be required in these programs. Similarly,

(S.H.S.P. distinguishes only between treaty Indians and others). However, this information was not presently available in suitable form from any other sources either. Consequently, the database development plan was simply to transfer at regular intervals the northern Saskatchewan portion of the S.H.S.P. Master Registration File to a separate magnetic tape file. The modifications in file structure and up-dating procedure necessary to adapt the file for research and planning purposes could then be carried out with no disruption to the original record-keeping system. This modified file would then essentially constitute a basic population database for northern Saskatchewan. As additional information (ethnic status, for example) became available through new data collection procedures, it could be incorporated readily into the database by means of S.H.S.P. reference numbers.

Few subject areas were as straightforward as population. For most of the other subject areas (labour force and income, education, vocational training, health, social services, and the resource subject areas), it was necessary to investigate a dozen or more relevant data series (thirty-one in the case of health), and to integrate many of these separate data series into the database design. Far more extensive modifications were usually necessary to adapt the various data series for research and planning purposes.

In a few cases, inadequacies in existing data series could not be overcome and it was necessary to recommend the implementation of new primary data collection and processing procedures.[5] Nevertheless, for all subject areas, the results of the database design process were considered well worth the effort. A wealth of under-

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groups representing native people, including the Metis Society of Saskatchewan, have expressed considerable concern about the lack of adequate information about the size and characteristics of the portion of the population they are attempting to represent. The Northern Municipal Council, too, has requested accurate information of this nature. At the same time, however, the NMC has stated its concern over the possible improper use of this information.

[5]The major problems encountered in the database development process are discussed specifically under PROBLEMS AND SOME SOLUTIONS on p. 105.

utilized information was discovered and satisfactory means to make use of much of this information were developed. In those cases where present sources were hopelessly inadequate, documentation of this inadequacy clearly was necessary before funds could be committed to new data collection efforts.

The discussion thus far has been concerned with the database design process, using as an example the topic of population. Proceeding in conjunction with these activities was the overall design and development process. This effort was directed at constructing a suitable means for decision makers and researchers in the various program areas to make use of the datbases developed for each information topic (see Fig. 3). Some of the design constraints and guidelines for a system of this kind were apparent from the beginning; others emerged during the course of the project. Those of greatest significance are described below:

1. Flexibility of Retrieval, Analysis, Presentation

   Due to the size and complexity of the database and to the diverse and changing nature of the information requirements, a considerable degree of flexibility was required of the information system. This flexibility was necessary at all stages - initially in the selection of appropriate data from the database, subsequently in the sorting, organization and analysis of the selected data, and finally in the presentation of the end results.

2. Simplicity of Use

   Program managers and planners were not experienced computer programmers and were not expected to become so. However, because of their direct familiarity with the programs and problems for which they were responsibile, they were in the best position to know what information was required at a given time and to interpret that information in its proper context. It was considered essential that these decision-makers be able to use the information system directly, without a computer programmer intervening in the process. The system, therefore, had to be simple and convenient to use, easy to learn, with ample allowance for operator error.

3. Interactive Capability

In order to combine the somewhat conflicting requirements of flexibility and simplicity, especially in a situation where programs, problems, information needs and interpretive frameworks were ill-defined and changing, an interactive system was essential. Details of each required routine could not be specified in advance, and it was not desirable to have a programmer translate each new requirement into a computer routine. It was preferable that program managers and planners be able to do their own simple "programming" to meet their particular requirements as they arose. An interactive system allows the user and the computer to interact in a step-by-step fashion until the desired result is produced in an acceptable form. At each step, the user is presented with a choice of procedures for selecting, organizing, analyzing or presenting information, and with clear and simple instructions for carrying out the chosen procedure. It is not necessary to devise the entire sequence in advance; each successive step can be based upon the results of the preceding step.[6]

4. Disaggregated Data Storage

The necessary degree of flexibility could only be achieved if data elements were stored in disaggregated form. This was particularly important since information requirements were poorly defined and subject to change, making it impossible to anticipate all future users of each data element.

5. Confidentiality Safeguards

Since data were to be stored in disaggregated form, protective measures were required to prevent improper use of the data. It was essential that unauthorized persons not be permitted access to records containing confidential information about identifiable individuals,

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[6] For a further explanation of interactive system design as applied to the Northern Saskatchewan Information System, see Volume I of the project report previously referred to. Also see A.R. Boyle, "A Minicomputer Geographic Information System, IMAGE: State of Development - January 1974" - Graphic Systems Design and Application Group, Saskatoon, Saskatchewan, 1974; and J. Beveridge, "Northern Saskatchewan Information System: Status Report - December 1974" - Institute for Northern Studies, Saskatoon, Saskatchewan, 1974.

or to derive such information (intentionally or unintentionally) in the course of statistical or analytical procedures. Also, different types of data required different levels of restriction with respect to different users. As far as possible, it was desirable that confidentiality safeguards be incorporated into the system design itself (rather than relying exclusively on an external screening mechanism, for example) so that the maximum benefits of the information system could be safely available to a much larger group of users.

6. Distinct Database for Each Program Area

The ideal arrangement in terms of ultimate system flexibility is perhaps for all data to be available to the user at once. The organizational structure of the Department of Northern Saskatchewan and computer hardware limitations made this both unnecessary and unfeasible. More suitable was a data collection, update and edit procedure which resulted in a working database for each program area, maintained by personnel from that program area, but which, nevertheless, contained data from other subject areas as necessary.[7]

7. Separation of Database Maintenance, System Maintenance, and Utilization Functions

A functional separation of this kind was necessary to prevent accidental destruction or alteration of data or of system routines by users, to provide for more efficient updating and file maintenance, to permit system revision and modification, and to further protect individual privacy.

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[7] For example, all education data would initially be collected and updated by Education Branch personnel, who were best able to do this. Selected education data determined by Health Branch personnel to be useful for health program planning purposes, and authorized by Education Branch for such purposes, would be transferred on a routine basis to the health database, where it would be integrated with health data collected by Health Branch personnel and with health-related data acquired in a similar manner from other branches.

These were some of the major considerations in the overall system design process. Essentially, the task was to design an information system which would allow existing data to be used most advantageously for program management, planning, evaluation and research, while at the same time eliminating or greatly reducing the well-known dangers to individual privacy associated with such a system. To a large extent, this was accomplished in the course of the Northern Saskatchewan Information System project. A basic interactive data retrieval, analysis and presentation system was developed for the available computer hardware, which was simple, safe and convenient to use by individuals unfamiliar with computer systems, yet flexible enough to apply to situations and problems which were not precisely defined or were undergoing change. Basic confidentiality measures were incorporated into the design which prevented unauthorized display or output of individual records (or portions of individual records), and prevented the display or output of statistical or tabular results which did not meet prespecified conditions with respect to a minimum number of cases or a minimum cell size (conditions specified for each type of data with respect to each type of user). These confidentiality measures did not seriously affect the descriptive and analytical flexibility of the system; indeed, its potential was considerably increased since individuals who would not be permitted access to individual records could in most cases compile statistics or conduct analyses based on data from these records.

PROBLEMS AND SOME SOLUTIONS

It may be appropriate at this point to review some of the major problems encountered in the information system design and development process, and to suggest some possible solutions to the problems. Problems fell into three general categories:

(1) problems associated with existing records and record-keeping systems;

(2) problems associated with the prospective users; and

(3) problems associated with the public.

Many of these problems are likely to arise in any major effort to make better use of existing data.

Problems associated with existing record-keeping systems.

The first problem with administrative record-keeping systems is that their contents are seldom familiar to those with planning and research interests. Frequently, the very existence of an important data series is unknown. The solution is ob vious - a thorough investigation and documentation of the contents of all potentially useful data series, preferably including an evaluation of data quality and an assessment of the suitability of the data series for various research applications. Needless to say, this can be a tedious and time-consuming job, but no alternative exists.

Further problems are likely to become apparent during the course of investigation and documentation. The standard output from most record-keeping systems is generally unsuitable for research purposes, since it is the result of organization, aggregation and presentation procedures intended for other specific functions. A related problem is that the standard output from any two record-keeping systems are usually incompatible, since different units and boundaries have been used to derive the final output in each case. One solution is to work backward through the output derivation procedure to a level when the data are sufficiently disaggregated to restructure according to research requirements.

At some point, accessibility becomes a problem for two reasons. First, data sufficiently disaggregated for research purposes are likely to be in the form of individual records related to individual human beings. The agency which initially collected the data is normally responsible for maintaining the confidentiality of this information. Furthermore, the agency has no wish to jeopardize its ongoing data collection procedure, in which public cooperation is critical, by permitting questionable use of this information. Consequently, the source agency must be assured that data confidentiality will be maintained, and that the proposed uses are justifiable in terms of benefit to the individuals involved. One method of handling this problem involves a staged request. The initial request to the source agency is for authority to simply examine the records to determine their possible suitability for research purposes. Subsequent requests can be made for retaining and utilizing the data for specific application, until a more comprehensive agreement can be reached. In this way, the source agency maintains its control over the data throughout the system development process, until safeguards and benefits can be demon-

strated. It is much more likely to provide access to its files under these conditions. This procedure may appear to be quite cumbersome, but it is workable in practice.

The second reason for a source agency's reluctance to provide access to its files is simply its understandable desire to prevent disruption of the primary intended functions of the record-keeping system. Usually, the agency's available resources are committed to the performance of these functions, and special requests can be handled only with difficulty or not at all. To prevent unnecessary disruption to these prime functions, it is necessary to determine the simplest and most efficient means of accessing the data which appear relevant. Usually this involves simply the creation of a duplicate copy of the relevant records in their presently stored form (on magnetic tape in the case of machine files). Further selection, examination and modification of these records can take place elsewhere with no further inconvenience to the system's operation. Eventually, some of the selection and modification can be built directly into the transfer procedure. Transfers can also be timed so as not to conflict with system operation.

A problem frequently revealed in the investigation process is an unacceptable level of data quality, due to weakness at various stages of the collection, processing, storage and retrieval process. There are several possible course of action here. One is to co-operate with the source agency to correct the fault as far as possible, thereby improving data quality to an acceptable level. Such assistance is frequently welcomed, especially with manual files. If this is not possible, it may be necessary to again work backwards through the data processing procedure to the last level where data quality is acceptable. Frequently, this proves to be the primary source document, prior to coding, sorting, or other processing, and the inconvenience and expense of utilizing data regularly at this stage must be weighed against the value of information gained. The worst possible (but not uncommon) situation occurs when data recorded on the source documents themselves are incomplete or inaccurate, or when the reporting form is inadequate. Again, the best course of action is to co-operate with the source agency to make the necessary improvements in its data collection procedure. This can involve extensive work, but the results are frequently rewarding. If this is not possible, no alternative remains but to seek alternate sources or initiate new data collection activiites.

The whole procedure here might be viewed as an attempt to determine the most suitable stage to tap into the present data collection and processing system to gain the greatest benefits of the existing procedure (in terms of data content and quality, convenient utilization and flexibility) with minimum disruption to the operation of the system.

A serious problem with a number of record-keeping systems is the destruction in the update process of certain data which are of no further use to the source agency, but which may be vital for longitudinal research. In some cases it may be possible to negotiate with the source agency to introduce measures into the procedure which will retain the necessary historic data for a specific period of time. However, it maye be necessary to achieve this by other means. Perhaps the simplest course of action is to schedule the data transfer for subsequent time series analysis. If the file is a large one, this procedure will rapidly present storage and handling difficulties, but it will serve as an interim measure to prevent further destruction of important data while appropriate update and selective retention procedures are devised.

Problems associated with prospective users.

The Introduction to this paper stressed the vital importance of accurate, up-to-date and meaningful information in policy formation and program administration and planning. Recognition of this requirement by northern Saskatchewan decision-makers was also commented upon. However, the role of information and research in the decision making process is by no means clear-cut and uncontroversial. Many administrators have had unfortunate experiences with statistics or research results which conflicted with their judgment, knowledge and experience, and they have come to view statistical information with distrust. Others, overwhelmed by massive volumes of computer print-out or statistical tables, have written off such information as unuseable. Frequently, these negative reactions have been justified. Sometimes the data collection and processing procedures which form the basis for these statistics have been hopelessly inadequate for producing any relaible results. Sometimes statistical analyses have been conducted by individuals far removed from the real situation and data have been anlayzed and interpreted out of context, again giving rise to incorrect results. Frequently, no effort has been made to organize, simplify and present statistical results in a form which could be absorbed and understood. Finally, many costly and time-consuming data

collection and research exercises have been carried out with no apparent application in mind. Many administrators recall few examples from their own experience where tangible benefits have been gained from statistical or research results, and regard the whole information system development process as a waste of time and money and an operational nuisance.

This unfortunate situation is not an easy one to overcome. Indeed, it was not successfully overcome in the course of the Northern Saskatchewan Information System project. The apparent solution is to provide skeptical administrators with positive experience in which relevant, reliable and understandable information is effectively applied to the resolution of important management or planning problems which were difficult or impossible to handle without such information. Probably the most effective way to accomplish this is through an "application approach" rather than through an overall system approach such as that attempted in northern Saskatchewan.[8] In the former approach, a specific segment of the database and information system is implemented for a specific application in a particular priority program area. In this case the need for certain specified information is readily apparent, manpower resources have been committed to effectively apply the information to the task at hand, and the management or planning benefits are immediately realized. Other segments are then implemented for other specific applications as the need for information becomes clear and the capability to effectively use it is developed. The implementation of each segment is essentially justified on its own merit, rather than as a part of an overall system.

It should be noted that an application approach to information system implementation does not preclude an integrated system approach to system design. With proper system design, individual segments can be integrated into an efficient and flexible overall system as implementation and development continues.

Problems associated with the public

An information system designed and implemented without regard for the rights, feelings and special circumstances of the population it is intended to benefit, is doomed to failure. No matter how great the potential benefits, an information system without public confidence cannot function for long. However, because of prevailing feelings

[8] A similar conclusion has been reached by others faced with system implementation problems. For a positive example see D.R. Fascione and E.B. Penry, "Establishing a Pupil Databank - Conflict Between Theory and Practice", Educational Technology, 2 (11) of November 1971.

of fear, distrust and resentment directed towards computerized databanks in general, such public confidence is extremely difficult to earn.

Public concern over actual or potential misuse of large centralized databanks has increased considerably in the last few years throughout North America. As a result, extensive investigations have been carried out and a great deal of effort has been directed towards improving methods for controlling such misuse.[9] Effective confidentiality safeguards must be a primary design consideration in any information system containing individual records.

In some aspects the situation is intensified in northern areas. Data have been collected and research has been conducted in northern communities for a long time, and in very few cases have the communities seen anything beneficial occur as a result. There has been a common feeling among northern residents that information is being collected either for the purpose of exerting control over some part of their lives, or merely to satisfy some distant person's or agency's curiosity about "natives" or "northerners". If the confidence and support of the northern public is to be earned, therefore, there must be clear indications that the proposed database or information system, in addition to protecting individual privacy, will provide direct and substantial benefits to northern communities.

Northern communities are currently attempting to strengthen their self-governing abilities and their general influence over their surrounding circumstances. The availability of reliable and relevant information is anticipated to be of considerable value to these communities in accomplishing this objective. In the meantime, however, information collection and storage is one of the circumstances with which they must deal. It is therefore desirable that information systems be designed in such a way that community representatives can directly make use of them, and furthermore, that community representatives have sufficient involvement in the design process itself. Presumably such involvement, to be meaningful and effective, should involve an appropriate degree of control and responsibility.

The Northern Saskatchewan Information System project was at least partially successful in this regard. As indicated else-

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[9] See for example the series of reports prepared by the Privacy and Computer Task Force for the Canadian Department of Communications and Department of Justice, and the major U.S. effort, "Databanks in a Free Society: Computers, Record-keeping and Privacy", prepared by the Computer Science and Engineering Board and the National Academy of Sciences.

where in the paper, one of the central design guidelines was the protection of the personal privacy of individuals on whom data were stored. To the greatest extent possible, confidentiality safeguards were incorporated into the internal system design, partially for incrased effectiveness but also to enable a greater number of users (including local government bodies, for example) to take advantage of the system directly. It was, of course, recognized that internal system safeguards cannot be made one hundred per cent foolproof. In addition to normal organizational safeguards, recommendations were developed for a regulatory body to oversee the development and use of the Northern Saskatchewan Information System. Represented on this body would be both prospective users of the system and the northern public. Some of the intended responsibilities were the establishment of guidelines for data collection and for information use (the key question being whether the potential benefits were worth the possible risks), the investigation of special cases where these guidelines proved inadequate, and the review of complaints of system abuse. It is interesting to note that before the project ended, an understanding had been reached between the parties concerned which provided at least the common ground for a co-operative effort at developing the kind of information base needed by northern Saskatchewan planners and decision makers.

CONCLUSION

The Northern Saskatchewan Information System project left little doubt that existing data could be utilized to a much greater extent in planning and research functions. To do so, briefly, required the development of an ongoing database for a particular program area (consisting of data elements selected and routinely required from various suitable files, modified and integrated for research purposes), and the development of a simple but flexible retrieval, analysis and presentation system (incorporating adequate confidentiality safeguards). The project also demonstrated some of the problems which are likely to arise when a major effort is undertaken to make better use of existing data. Some of these problems are related to the existing record-keeping systems themselves, and usually require a great deal of tedious and time-consuming work to overcome. Other problems are related to the prospective users of an improved information capability, who often require clear and convincing evidence that there are indeed benefits to be derived by using such information. Finally, there are problems related to the public, those

individuals who will bear the consequences, whether positive or negative, of increased utilization of information in decision making. Unless the northern public develops some degree of confidence that the benefits will offset the risks, it is unlikely that more effective information utilization will be achieved. Whether these problems can be adequately overcome remains to be seen. The Northern Saskatchewan experiment provided at least some hopeful indications.

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DEMOGRAPHIC RESEARCH IN NORTHERN MANITOBA

Recherche démographique au nord du Manitoba

W. HENDERSON[1]

ABSTRACT. - The very fact that population dynamics are caused by and have an effect on a whole range of social issues, only serves to stress the importance and need for further, more comprehensive demographic research. This applies not only to Canada's growing urban centres with their complex social and economic sub-systems, but also, and possible with more urgency, to her developing northern expanses which still reflect Third World proportions. This paper is written in the context of the province of Manitoba and its activities within its northern area. It is an attempt first, to examine the nature of demographic research, and to demonstrate its relevance and utility in planning and policy development; and secondly, to describe some of the problems researchers in northern demography must face, and explore possible solutions to these problems. It is recognized, however, that before any research can be undertaken a solid data base must first be established.

RESUME. - L'interdépendance de la dynamique des populations et des développements socio-économiques soulève l'importance des recherches démographiques et la nécessité d'en étendre la portée. Ceci s'applique non seulement aux centres urbains du Canada avec la complexité de leurs infrastructures sociales et économiques mais aussi aux territoires nordiques qui sont en voie de développement.

La présent texte porte sur le Manitoba et ses activités en milieu nordique. L'auteur examine d'abord ce que doit être une recherche démographique en ensoulignant l'importance et l'utilité pour le développement d'une planification et d'une politique démographiques. Dans un second temps il s'attaque aux problèmes auxquels doivent faire face les chercheurs en démographique nordique et suggère des solutions possibles.

L'auteur conclue en faisant remarquer qu'avant d'entreprendre une recherche quelconque, il est nécessaire d'établir une base de données fiables.

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INTRODUCTION

In the broadest sense, demography as a science may be conceived as having four major objectives (Stockwell, 1970):

1) ascertaining the size, composition, and distribution of a population in any given area of human habitation;

2) observing, measuring, and describing changes in size, composition, and distribution over time;

3) observing, measuring, and describing the processes (the interaction between fertility, mortality, and migration) through which such changes are being affected; and

4) analyzing the underlying determinants and consequences of such changes.

This definition, as stated, progresses from a narrow sense of formal demography - referring to the statistical description of population trends and characteristics - to a much broader area of general population study wherein the student of population attempts to understand and interpret the societal forces and events that have influenced population changes, as well as the influence these population changes may eventually have on society in the future.

The very fact that population dynamics are both caused by, and have an effect on, a whole range of social issues only stresses the importance and need for further, more comprehensive demographic research. This applies not only to Canada's growing urban centres with their complex social and economic subsystems, but also, and possibly more desperately, to her developing northern expanses which still reflect Third World proportions.

It is probable that other provinces and territories share many of Manitoba's thoughts and concerns toward these same areas of neglect, spawned primarily by the problems and inadequacies of northern demographic data now existing. From this common sharing will come, it is hoped, some solution to the issues and problems at hand, and a resolving of many of the handicaps re-

searchers have been forced to tolerate in the past.

DEMOGRAPHY - ITS PLACE IN AN OVERALL RESEARCH, PLANNING AND POLICY SCHEME

Premise 1):
Governments and businesses plan for the needs of society;

Premise 2):
Governments and businesses must study the factors affecting the needs of society;

Premise 3):
Population affects the needs of society; therefore

Conclusion:
Governments and businesses must study population.

This very simple exercise in logic forms a valid argument for demographic research in planning and policy development. However, administrators do not always deal in logic and in many cases further explanations are required. The explanations in the following model (Fig. 1) are, admittedly, simplistic in nature; however, they do lend credence to the way in which population dynamics can affect the needs of people. To many, this point must be emphasized.

Population Dynamics Model:

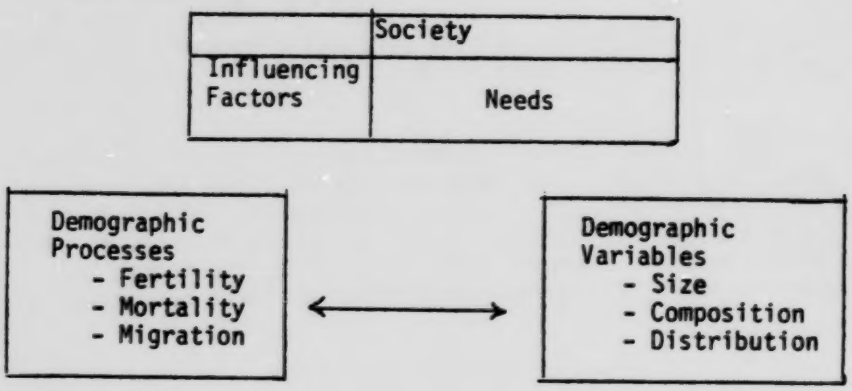

Fig. 1 - Population Dynamics Model

The population dynamics model is made up of three basic components: society, its needs and its influencing factors; the demographic processes of fertility, mortality, and migration; and the demographic variables of size, composition, and distribution.

As the diagram shows, the influencing factors of a society act as independent variables to affect the demographic processes of fertility, mortality, and migration. Just as religious views or some other extension of culture in a society may affect the use of birth control and, hence, the fertility rate, the spread of disease in a society will have definite effects on the mortality rate. Similarly, the lack of jobs in a certain area may influence a migration out of the area of surplus into a new area of demand. Culture, disease and unemployment are just a few elements of society, but each have demonstrated effects on the demographic processes.

In the second stage of the model, the interaction of fertility, mortality and migration, and their effect on the size, composition and distribution of a population is shown. The number of births and deaths, plus the amount of in-migration and out-migration, will be contributing factors to population change and redistribution. An example would be a larger in-migration of males over females into a mining community such as Thompson, or a migration shift between, say, Thicket Portage and Thompson.

However, fertility, mortality and migration are not only causal factors in their relation to the demographic variables. Rather, these processes may in turn be influenced by the size, composition and distribution of a population. For instance, a large proportion of old people in a population may influence the mortality rates, while lessening the potential for childbirth that a younger population may have.

The final stage in the model illustrates the effect on society's needs by the demographic variables. This is the stage that should be closely examined by planners and policy makers in the light of goods and services demanded by a particular society. The size, composition and distribution of the population in any given area of habitation directly affects, for example, the number and location of schools and teachers required to educate the young, the number and location of houses to be built, or the number and volume of retail service outlets that could be est-

ablished, to name but a few societal needs.

THE NORTHERN MANITOBA SITUATION

While those provinces and territories concerned with the North, share a common interest in northern demography, it is important to note that they do not share the same environmental (geographical, historical, social, economical, physical, and political) characteristics which may have an influence on the approaches to the subject. In order, therefore, to understand and more fully appreciate demography in northern Manitoba, it is necessary to be aware of a certain conceptual framework.

As described by the Northern Affairs, October 1974:

> "Northern Manitoba means all that part of Manitoba north of the northern boundary of township 21 that is not included in
>
> (i) a wildlife management area or refuge designated as such under The Wildlife Act; or
>
> (ii) a provincial forest designated as such under The Forest Act; or
>
> (iii) a municipality; or
>
> (iv) any area designated by the Lieutenant Governor in Council for the purposes of the Act." (Fig.2)

Covering 80% of the province's land area, Northern Manitoba contains only 8% of its entire population. Today, of the 93,000 northerners, some 55,000 live and work in eight of the larger industrial-resource centres (Fig. 3), while the other 38,000 Treaty and non-Treaty people are scattered throughout the north in remote settlements or reserves. This latter group, consisting almost entirely of Indian and Métis, is the target population for the Department's planning and programming.

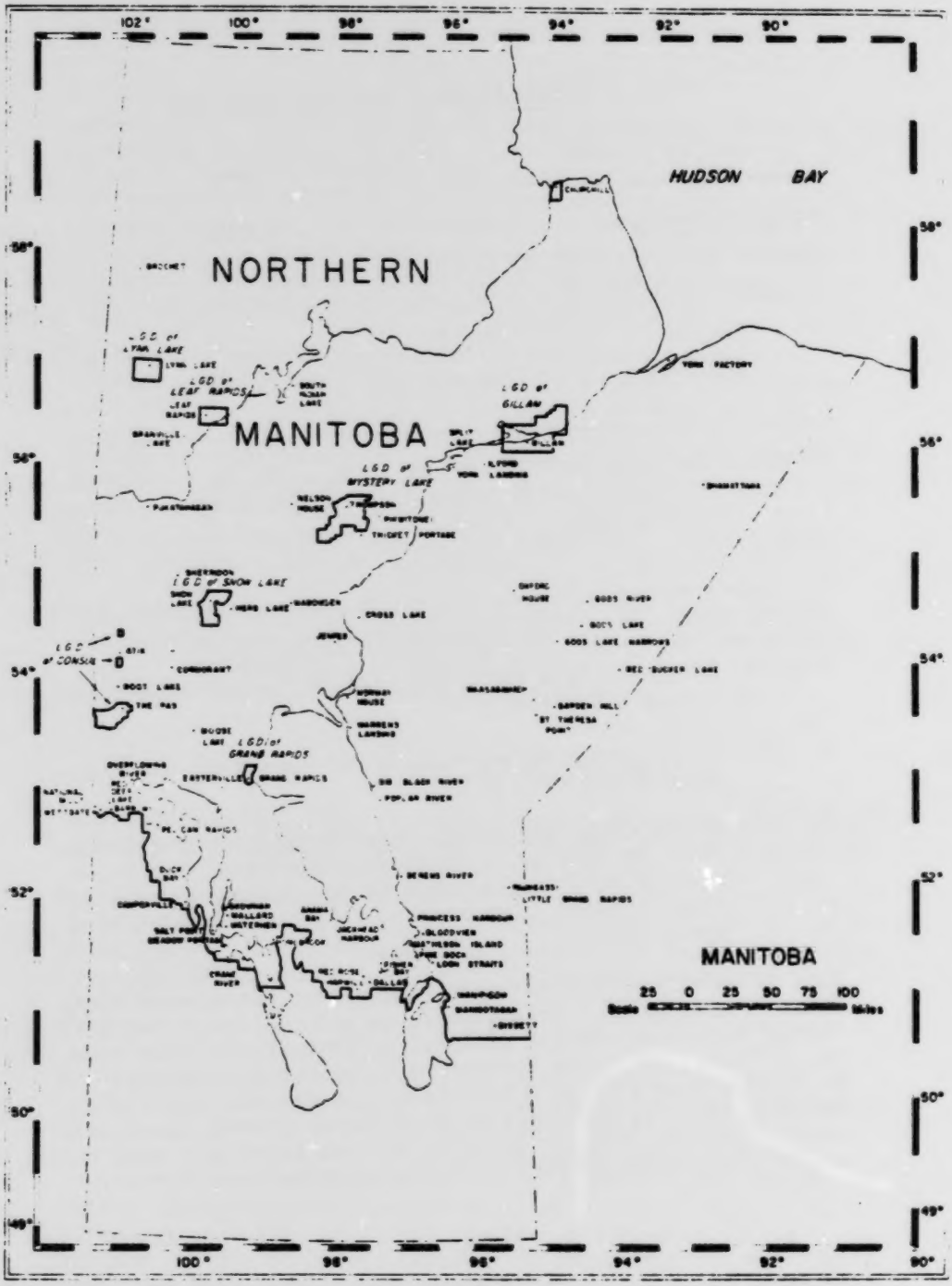
HUDSON BAY
NORTHERN
MANITOBA
MANITOBA
102°
100°
98°
96°
94°
92°
90°
60°
58°
56°
54°
52°
50°
49°
L.G.D. of LYNN LAKE
L.G.D. of LEAF RAPIDS
L.G.D. of GILLAM
L.G.D. of MYSTERY LAKE
L.G.D. of SNOW LAKE
L.G.D. of CONSUL
L.G.D. of GRAND RAPIDS
25 0 25 50 75 100
Statute Miles

Fig. 2.

Fig. 3 - POPULATION OF NORTHERN MANITOBA

	1971	1975	1971-75
Northern Manitoba	86,995	93,536	6,541
Urban	52,304	54,962	2,658
Remote	34,691	38,574	3,883
- Treaty	20,287	25,327	5,040
- Non-Treaty	14,404	13,247	- 1,157

SOURCE: Manitoba Health Services Commission, Data Compiled by The Department of Northern Affairs, Planning and Policy Development.

The Department of Northern Affairs has three main areas of responsibility:

1) to co-ordinate the activities of the Government in northern Manitoba,

2) to deliver programs related to the social and economic development of the North,

3) to encourage and assist unorganized northern communities in developing local governments so they may achieve more independence in the management of their local affairs. (Department of Northern Affairs Handbook, 1975)

Some 40 unincorporated northern communities, because of their unique situation and circumstance, do not conform to the traditional municipal concept of local government, but come under the jurisdiction of the Northern Affairs Act which was passed to provide them with an alternative form of local expression. The Act grants to the Minister of Northern Affairs powers and responsibilities similar to those of a municipality, to act as a local government on behalf of the unincorporated northern

communities. The Minister is, in turn, advised by community committees, appointed in the smaller communities, and by community councils elected by the residents of the larger settlements. In practice, both committees and councils may actively manage many of their own affairs, including the preparation of the annual budget and the authorization of expenditures. The ultimate responsibility for their actions however, rests with the Minister.

The Division of Planning and Policy Development within the Department of Northern Affairs supplies a policy and program analysis and review service to the Deputy Minister and the Departmental Executive. It undertakes research and policy development assignments in specific areas of local government development, transportation and communication, economic and resource development, and social policy. As well, the Division co-ordinates research and planning activities with other agencies active in the North.

It is within the context of this Division that demographic studies should be undertaken. But, in fact, most demographic research attempted is a result of personal interest, rather than as part of a planning and policy strategy.

DEMOGRAPHIC RESEARCH IN NORTHERN MANITOBA

Generally speaking, only a minimal amount of direct interest and effort has been given by the Department of Northern Affairs (and other departments) to demographic research in Northern Manitoba. The Department does not have a "population analyst" as such, with on-going studies to identify trends, or to examine forces affecting population changes and the possible consequences which may result, etc. As has been mentioned most demographic research attempted has been a result of personal interest rather than part of a planning and policy strategy.

However, to suggest that the Department ignores population in its planning strategy would be false. Recent planning exercises related to the social and economic development of northern Manitoba show a definite concern for demography, at least in terms of projecting population sizes. Unfortunately though, most of the projections amount to no more than a "guess" at, or an extrapolation of, total population size with little concern for the processes involved in population change. While realizing that "small area" projections are normally understood

to be academic exercises, and that "guessing", at times, could be no worse than an econometric model, further insight into natural increase and net migration would still be of great value.

Population projections are required tools for planners and policy-makers in their consideration of public expenditures for new facilities such as roads, schools, hospitals, subdivisions, etc. However, unless there is on-going work in this area to try and understand the internal and external factors affecting population change, planners and policy makers, who are fighting against time and political pressures, must submit to using crude measures and time-saver projections such as "guessing" or simple extrapolation.

Other areas of population analysis undertaken in the planning exercise referred to above, center on family size and age-sex structure. While these components of demography were largely influenced by the crudeness of the population projections, the analyses carried out show direct implications for future housing requirements and labour force potential.

How are the demographic processes acting in northern Manitoba?

Very little is known about the fertility of Manitoba's northerners, particularly among the Metis people. We do know that a child-woman ratio[1] approaching 1100 is common, and that approximately 47% of the population in a remote community is under 15 years of age, (Henderson 1974 and Fig. 4) It is possible to speculate on the influences on such high fertility rates, (high infant mortality rates; cultural or religious views; monthly baby bonus cheques; little in the way of recreational facilities, especially in the evening; lack of family planning or not holding to family planning practices; etc.), but the lack of good data and on-going analysis prevents a better understanding of this powerful factor affecting a population.

Mortality conditions among northerners in the remote communities of Manitoba have generally been considered as stable. However, with the planned increase in health facilities in the remote north, and the anticipated rise in the quality of life, lower

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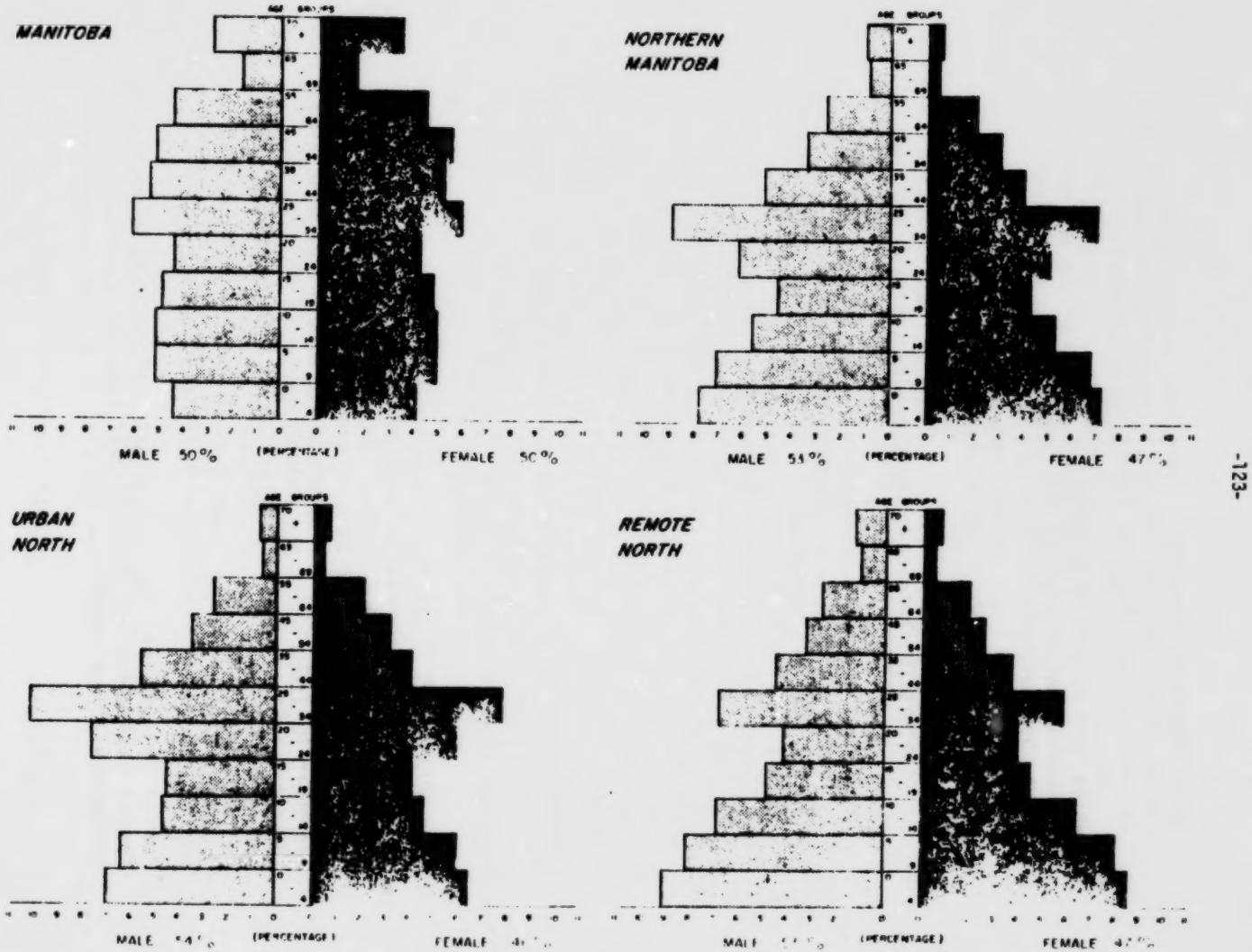
[1] $\frac{\text{Population 0-4}}{\text{Females 15-44}} \times 1000$



POPULATION PYRAMIDS 1971 Fig. 4.

rates should be favoured. Therefore, unless fertility can be controlled, the natural increase gap will continue to widen and dominate the forces behind population growth.

While very little is known about the fertility and mortality conditions present in the remote north, still less is known about migration. Even net migration figures are questionable in light of the crude measures of fertility and mortality currently being used.

BARRIERS TO DEMOGRAPHIC RESEARCH IN NORTHERN MANITOBA

The major obstacle to demographic research in northern Manitoba is lack of data (although this relates to all interests, whether demographic, socio-economic, physical, organizational, etc.). Those concerned with research, planning and analysis for the Department of Northern Affairs (and many other departments) agree that it is a great challenge to find and use existing data for the purposes of northern programming. Yet, accurate and reliable information is exactly what is required: in fact, it is a necessity for comprehensive planning and delivery of programmes in the north.

A few of the major constraints relating to data availability are discussed below.

Target Area

The north in Manitoba is all too often defined and thought of only in terms of industrial-resource-based urban centres such as Thompson, The Pas and Flin-Flon. It is important to point out that the Department of Northern Affairs directs most of its programming to the *unorganized* and remote communities of northern Manitoba which are underdeveloped and suffer from physical isolation as well as isolation from the usual data bases.

Boundaries

One of the problems that arises quite often on an interdepartmental basis concerns the different data collection boundaries being used. The north, for example, as defined by the Depart-

ment of Northern Affairs, has not been consistent in the past with either the Canadian Census boundary (although this will change with the 1976 Census) or with the delineations of the provincial Departments of Agriculture, Industry and Commerce or Health and Social Development.

Until common boundaries for data collection are established, the task of assembling cross-departmental data will continue to be very taxing.

The Census

A great deal of the data has been taken from the official Canadian Census by the Department of Northern Affairs. Unfortunately, none is published information and Enumeration Area (E.A.) printouts have had to be used. While the printouts provide the researcher with a great deal of statistical information, there are two major points which, when considered, tend to lessen one's enthusiasm for this data source. The first is that the E.A. printouts usually change in physical area from one census to another, depending on population size and official boundary changes. This makes comparison difficult over time, even with the use of conversion tables and E.A. descriptions. The second point is in regard to "small area" data where the confidentiality procedure literally ruins the actual numbers. These points, of course, just add to the many errors inherent in northern census data - not to mention under-enumeration and improper enumeration techniques.

Understanding these problems in the collection of northern census data is the first step towards correcting them. The Province of Manitoba, through its Data Users Planning Committee and its Bureau of Statistics, can and has approached Ottawa on the problems mentioned. As a matter of fact, a progressive step has already been taken by the splitting of the one northern census division into four separate divisions.

The author has proposed, through the organizations mentioned, and directly to the Assistant Chief Statistician in Ottawa, that:

(a) enumeration areas coincide with specific communities in the North, rather than combining communities or parts thereof;

(b) the Department of Northern Affairs offer assistance in

pre-publicizing the Census in the North, and further,

(c) the Department assist in the selection of more competent northern enumerators.

The use of translated survey sheets in Native languages is also being suggested.

Besides all of these problems, and despite the possible solutions or modifications in procedure, the fact still remains that the Census occurs a decade at a time or every five years for population data, and too many changes go unrecorded during the interim.

"Surveyed-to-death" syndrome

Assuming that five-year and ten-year Census data are considered useful, between-Census data must still be collected for purposes of planning and policy development.

Traditionally, surveys do not go over well in the North, and there is no reason to believe the case is any different in northern Manitoba. It is constantly said that the term "surveyed-to-death" echoes over the land of the "One hundred thousand lakes".

All too often, "strangers" are sent to administer surveys in the northern communities, and it is no wonder the response rate is so low. In a few cases these survey-takers have been known to completely bungle a promising exercise by poor and improper techniques, and to have been warned, literally, never to come back. It is attempts like these that set progress back many months, and sometimes years.

Field Staff

The Data and Information Group of the Division of Planning and Policy Development of the Department of Northern Affairs is presently trying to implement a data collection system, using the intimate knowledge which the field staff of the Department have of the communities they serve. The process is a slow one. Confidence has to be built up to enable both the field staff and the communities to appreciate the value of this implementation.

The potential for collecting data exists, but cooperation and recognition of need are the keys to northern Manitoba's data problems. The sooner the native northerner and the southern planner understand these criteria, the sooner the communities they serve will benefit.

CONCLUSION

While demographic research in Northern Manitoba has been minimal, it has not been entirely ignored by the Department of Northern Affairs. Moreover, it may be suggested that Manitoba has possibly been more successful in attempting northern demographic research than most of the other provinces and territories in the North. However, a great deal more needs to be done to further facilitate decisions concerning the needs of the people.

The greatest barriers have been recognized and somehow, a much better base, providing accurate and up-to-date data, has to be established, not only for northern Manitoba, but for the north in general. A possible solution may well be co-ordinated effort and cooperation on the part of not only provincial and federal government agencies, but also on the part of university and other research centres.

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LA POPULATION INUIT DU NOUVEAU-QUEBEC

The Inuit Population of New Quebec

DENIS LACHANCE[1]

RESUME. - Dans le cadre de la révision et de la réédition du "Handbook of North American Indians" par le Smithsonian Institution, le groupe de recherche Inuksiutiit, sous la direction de Bernard Saladin d'anglure et Louis-Jacques Dorais, fut chargé de la rédaction de la section attribuée aux Inuit du Nouveau-Québec. Une partie importante des recherches supplémentaires impliquées par cette synthèse ethnographique a porté sur la démographie. Il a été possible de construire un profil approximatif de l'évolution de la population inuit depuis le début du siècle, et grâce aux estimations de G. Taylor portant sur les informations recueillies par Jens Haven, en 1770, la population inuit côtière (baie d'Ungava,détroit d'Hudson et baie d'Hudson) peut être établie à 1660 individus environ, ce qui est bien supérieur à l'estimation de A.P. Low, pour 1205 individus.

De façon globale on peut conclure à une relative stabilité de la population inuit jusqu'à 1945 environ. Cette stabilité paraît factice en raison des effets connus de la présence grandissante des Euro-canadiens depuis 1830-1840 (épidémies périodiques, diminution des principales ressources, modification du cycle annuel et du régime alimentaire). Cette présence et ces effets se sont modifiés depuis la dernière guerre entraînant cette fois une transformation radicale du mode de résidence et des

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structures démographiques: regroupement et sédentarisation de la population autour des agences gouvernementales et privées en concommitance avec l'augmentation rapide de la population et son rajeunissement.

ABSTRACT. - The work of the Inuksiutiit Research Group, under the direction of Bernard Saladin d'Anglure and Louis-Jacques Dorais, in revising the text of the section on the Inuit of New Quebec for the new edition of THE HANDBOOK OF NORTH AMERICAN INDIANS, published by the Smithsonian Institution, is described.

An important part of the supplementary research on ethnography had a bearing on demography. It was possible to structure an approximate profile of the evolution of the Inuit population from the beginning of the century. Thanks to the estimates made by G. Taylor, following information collected by Jens Haven, it was possible to estimate that in 1770, the coastal Inuit population in the areas of Ungava Bay, the Hudson Strait, and Hudson Bay was about 1,660 individuals, a far superior estimate than that of A.P. Low, who had set it at around 1205.

Viewed globally, it could be concluded that there had been relative stability in the Inuit population until about 1945. This stability would appear false,however, if viewed from the known effects of the great influx of Euro-Canadians from 1830-1940, bringing as it did periodical epidemics, diminution of principal resources, modification of the annual cycle, and hence food supply. However, this influx and its effects were modified following World War II, which brought about a radical transformation in housing and demographic structure: a regrouping and sedentarization of the population around those areas occupied by government agencies and private industry, with a subsequent rise and rejuvenation of population.

Cette communication ne vise pas à présenter une analyse démographique très poussée de la population inuit du Nouveau-Québec, ni à proposer de nouvelles techniques ou de nouveaux champs de recherche. Mon objectif est simplement de résumer, dans un premier temps, les données démographiques disponibles et dans un second, les hypothèses de travail retenues pour une étude détaillée des structures résidentielles des Inuit d'Inujjuaq (Inoucdjouac/Port Harrison), dans une perspective diachronique. Etant ethnologue, je m'intéresse moins aux statistiques pour elles-mêmes qu'au lien entre la population (en tenant compte de ses caractéristiques propres) et les conditions écologiques et socio-économiques dans lesquelles elle doit vivre et auxquelles elle doit s'ajuster! Mon intention n'est donc pas de faireune critique (inutile d'ailleurs) du passé, ni de tenter des projections futuristes, mais tout simplement de situer, dans les faits passés et contemporains, les principaux changements survenus dans la population inuit quant à leur nombre et à leur inscription sur le territoire.

Il est relativement facile de démontrer les deux observations suivantes: depuis le début du XXe siècle, la population inuit du Nouveau-Quebec a doublé; d'autre part au cours des vingt-cinq dernières années, elle s'est concentrée et sédentarisée en petites communautés côtières sous l'influence des agences euro-canadiennes avec lesquelles elle a accru ses contacts.

L'explication de ces faits statistiques déborde le cadre strict de la démographie et elle fait appel à deux ordres de phénomènes: l'un, plutôt descriptif, vise à reconstruire les mécanismes de cette évolution démographique (le "comment") et l'autre, plus analytique, a trait aux raisons de cette évolution (le "pourquoi"). Dans ce dernier aspect de la question, il faut distinguer les facteurs endogènes (surtout les formes d'organisation socio-territoriale et les changements dans les rapports écologiques) et les facteurs exogènes (les pressions directes et indirectes exercées par les agences allochtones). Je reviendrai sur ce point en conclusion de cet exposé.

A. LA POPULATION INUIT DU NOUVEAU-QUEBEC

a) Avant l'arrivée des Allochtones

Durant la période traditionnelle, la population inuit

paraît avoir été stable. La quantité de ressources disponibles et l'état de la technologie imposaient une limite à la croissance de la population, limite au-delà de laquelle la rupture de l'équilibre fragile entre les ressources et leur consommation entraînait la disette et la famine, et en conséquence une réduction de la population. La mortalité infantile élevée maintenait très bas le rythme de croissance de la population, et l'espérance de vie de devait guère dépasser 35 ou 40 ans.

En période de famine aiguë, le rationnement alimentaire touchait d'abord les personnes improductives: les vieillards et les nouveaux-nés, et parmi ces derniers, les filles plus que les garçons. A la limite et dans le seul but d'assurer la survie du groupe, les vieillards étaient abandonnés, la plupart du temps à leur demande expresse, de même que certains nouveaux-nés que la mère, elle-même sous-alimentée à ce moment-là, ne pouvait pas nourrir.

Afin d'assurer une exploitation maximale des ressources, les Inuit étaient dispersés en une cinquantaine de bandes familiales sur la côte, une dizaine à l'intérieur des terres et environ quinze sur les îles, pour une population de 2,000 Inuit approximativement. L'estimé de Jens Haven, en 1773, donnait 1,660 Inuit dans les dix sites principaux qu'il mentionnait (cf. A. b). Cet estimé s'appliquait aux Inuit côtiers, tous les noms utilisés désignant des sites côtiers connus, à l'exception d'Ittibime (Itivimi) qui n'est pas un toponyme à proprement parler. On peut assumer que l'existence des Inuit insulaires et intérieurs était inconnue de Haven.

Le tableau suivant résume les données démographiques estimées selon les zones écologiques. Son intérêt principal ne réside pas dans les chiffres absolus de population, mais dans la comparaison de la grandeur relative de la population dans les diverses zones.

HABITAT / SECTEUR	ILES	COTE	INTERIEUR	TOTAL
Septentrional	100	750	50	900
Intermédiaire	50	450	100	600
Méridional	150	300	70	520
TOTAL	300	1,500	220	2,020

La population inuit du Nouveau-Québec et des îles adjacentes a dû se maintenir à ce niveau (i.e. entre 1,800 et 2,200 individus) durant les deux ou trois siècles précédant les contacts prolongés avec les Eurocanadiens.

b) Des premiers contacts à 1950

La stabilité relative de la population inuit avant 1950 semble davantage attribuable à l'absence ou à l'imprécision de données numériques qu'au maintien réel de ce niveau de population. L'hypothèse la plus vraisemblable est celle d'une croissance très faible de la population jusqu'aux dernières décennies du XIXe siècle, suivie d'un chute de population (entre 1880 et 1920) et d'une reprise lente (1930-1950), puis rapide (1950-1970.

En 1773, Jens Haven, missionnaire morave sur la côte atlantique du Labrador terreneuvien, a établi, grâce à deux informateurs inuit originaires de la baie d'Ungava, une liste de dix noms de campement et estimé leur population en termes de maisons semi-souterraines et de maisons de neige. Selon Garth Taylor, une maison semi-souterraine pouvait abriter environ 20 personnes, et une maison de neige, 10 personnes (Taylor1968). Les sites mentionnés par Jens Haven (tableau 1) sont tous côtiers, mais à cette époque un peu plus d'une centaine d'Inuit vivaient à l'intérieur des terres, et quelques centaines sur les îles côtières importantes (Qikirtait/Belcher, Pujjunak/Mansel, Tuujjat/Nottingham), de sorte que la population totale devait être d'environ 2,000 personnes.

Vers 1895, A.P. Low, suite à des informations fournies par les employés de la HBC à Kuujjuaq (Chimo) et Kuujjuaraapik (Great Whale River), estimait la population côtière à 241 familles environ, et à 5 individus, la dimension moyenne d'une famille (tableau II). Il faudrait ajouter quelques centaines de personnes vivant sur les îles et à l'intérieur des terres pour obtenir la population globale.

Entre l'estimé de Jens Haven et celui de A.P. Low is y a un écart de 400 personnes, soit une baisse de population de 20% à 25%. Durant l'hiver 1892-93, une famine sévère aurait fait disparaître 25 familles dans la région de la baie d'Ungava (Low, 1895: 140). Les maladies épidémiques apportées par les

Eurocanadiens en contact avec les Inuit ont fait aussi de nombreuses victimes: peu après l'ouverture du poste de la HBC à Kuujjuaq (Chimo) en 1830, une forte grippe décima une famille campée près du poste! Les Inuit étaient alors sans défenses devant ces maladies (influenza, rougeole, rubéole, otite, etc.) et les médicaments étaient rares! Les famines, elles, furent liées à la raréfaction croissante du caribou, du morse et même du phoque annelé à partir de la fin du XIXe siècle jusqu'au milieu du XXe siècle. Il y a eu sûrement une diminution notable de la population au cours des dernières décennies du XIXe siècle.

Au cours du XXe siècle, on note une reprise très lente de la croissance démographique inuit, jusqu'en 1951. Dans le tableau III, il a fallu interpoler certaines données manquantes, de sorte que les données démographiques avant 1961 sont toutes plus ou moins approximatives. Ainsi l'écart entre l'estimé de Burwash (1927) et les données du recensement de 1931 reste inexplicable! Il en est de même de l'écart entre l'estimé de Low, même corrigé à 1,650 individus, et celui de Burwash, à 2,102. Le seul accroissement démographique naturel ne peut en rendre compte, et en ce sens les données du recensement de 1931 paraissent plus probables que celles de Burwash, si on admet un taux d'augmentation naturelle d'environ 0.6% par année entre 1895 et 1931.

Avec l'instauration, en 1922, de visites médicales annuelles destinées au dépistage des maladies pulmonaires et épidemiques, le taux d'augmentation naturel de la population inuit a légèrement augmenté entre 1931 et 1951 pour s'établir àenviron 1% par année pour cette période.

Quelques mouvements migratoires ont été notés depuis l'ouverture du poste de Kuujjuaq. En effet les premiers Inuit rencontrés à Kuujjuaq par Finlayson, a l'automne 1830, étaient originaires de Tasiujaq (Richmond Gulf) qu'ils avaient fui par crainte des Indiens. McLean, lors de son séjour à Kuujjuaq, fut informé que des Inuit de la Terre de Baffin avaient traversé le détroit d'Hudson par les îles Tuujjat (Nottingham et Salisbury), vers 1840. Entre 1890 et 1920, les Inuit de l'intérieur vinrent se joindre aux Inuit côtiers en raison de la disparition du caribou, et plusiers familles originaires de la baie d'Ungava traversèrent la péninsule vers Puvirnituuq et Inujjuaq. Durant l'hiver 1916, Flaherty nota que tous les Inuit entre Qikirtajuaq (Cape

Smith) et Inujjuaq avaient abandonné leur territoire en raison d'une pénurie exceptionnelle de phoques. Après la fermeture de plusieurs postes de commerce en 1940, un certain réaménagement de la population, surtout sur le détroit d'Hudson et dans la baie d'Ungava, eut lieu: les Inuit de Salluit (Deception Bay) se joignirent à ceux de Salluit (Sagluk) ou de Kangirsujuaq (Wakeham Bay); les sites de Tasiujaq (Leaf Bay) et celui de Killiniq (Port Burwell) furent presque abandonnés. Au début des années 50, une quinzaine de familles d'Inujjuaq furent envoyées à Grise Fjord; le site de Tasiujaq (Richmond Gulf) fut abandonné, au profit de Kuujjuaraapik (Great Whale River) et les Inuit de Qikirtajuaq (Cape Smith) durent déménager au nouveau site de Puvirnituuq.

c) De 1950 à 1970

Les statistiques disponibles deviennent plus précises à mesure que la sédentarisation des Esquimaux se poursuit et que s'accroît la présence gouvernementale canadienne au Nouveau-Québec. Les chiffres que nous utiliserons proviennent de recensements effectués par le gouvernement canadien (1951 et 1961) et par le gouvernement du Québec (1967, 1968, 1969). De plus, la compilation des registres officiels disponibles permettra de compléter certaines données pour la période de 1950 à 1960.

De 1951 à 1969 il y a une nette augmentation de la population: 2244 en 1951, 2689 en 1961 et 3561 en 1969. Ceci représente un taux d'accroissement de la population de 21.25 pour 1000 de 1951 à 1969, et de 35,71 pour 1000 de 1961 à 1969, soit un taux général de 26.65 pour 1000 pour la période de 1951 à 1969.

Les pyramides d'âge-sexe confirment cette croissance très rapide de la population autochtone: Les moins de vingt ans forment, en 1969, 56.9% de la population totale. L'étranglement de la pyramide à la classe d'âge 25-29 correspond à une certaine régression de la population durant les années de la guerre (1940-1944). L'élargissement prononcé de la pyramide à sa base (classe 0-4 et 5-9) nous fait situer à la fin des années 50 le début de l'explosion démographique.

Il n'y a guère de différences notables d'une région à l'autre, sauf en ce qui touche à la proportion des vieillards (60 ans et plus). Avec 25.72% de la population totale, la région de la baie

d'Ungava compte 34.97% des individus de 60 ans et plus, et la région de la baie d'Hudson, qui groupe 50.52% de la population totale, en compte 39.16% seulement.

La répartition selon le sexe varie d'un groupe d'âges à l'autre et d'une région à l'autre. Dans l'ensemble, il y a un léger excédent masculin: 970 femmes pour 1000 hommes. A noter que le sexe-ratio augmente à mesure qu'on progresse vers l'est: région A: 908, région B: 981, région C: 1077. Le nombre de femmes est particulièrement réduit chez les adultes (20 à 59 ans): 909 femmes pour 1000 hommes. Il y a presque égalité chez les moins de vingt ans, et une nette dominance des femmes chez les 60 ans et plus (1134 femmes pour 1000 hommes). Cette configuration générale en fonction des groupes d'âges ne se retrouve que dans la région C, où le nombre de femmes est supérieur au nombre d'hommes (sexe-ratio) supérieur à 1000). Dans les deux autres régions, le sexe-ratio tend à baisser à mesure que l'âge augmente. Dans la région A, il est toujours inférieur à 1000.

En 1968, le taux de natalité fut d'environ 50 pour 1000 (163 naissances pour une population estimée au milieu de 1968 à 3219), et le taux de fécondité de 228 pour 1000 environ (Simard, 1960). Pour la période 1950-1960, le taux de natalité aurait été de 438 pour 1000 (d'après compilation des registres pour cette période).

Le taux de mortalité selon le ministère du Nord Canadien en 1963, serait de 20 pour 1000; et le taux de mortalité infantile serait de 193 pour 1000 en 1961 (Revue North, mai-juin 1963). A partir de la liste des décès enregistrés de 1950 à 1959, nous obtenons un taux de mortalité de 18.8 pour 1000 pour cette période, et un taux de mortalité infantile de 171.7 pour 1000 pour la période 1950-1958, (Il est plus que probable que les décès ne furent pas tous enregistrés et les taux calculés à partir de ces registres sont donc légèrement inférieurs à la réalité).

Des mêmes registres, nous avons tiré quelques indications sur l'âge au mariage et l'écart d'âge entre les conjoints. De 1950 à 1959, 1927 mariages furent enregistrés, dont 29 impliquaient un veuf, ou une veuve, ou les deux (12 cas). Lors du premier mariage, l'âge moyen du mari est de 25 ans, celui de la femme de 23 ans. Lors d'un remariage, l'âge moyen est de 41 ans, quel que soit le sexe. Pour l'ensemble, on obtient une moyenne de 28

ans et 26 ans respectivement. Quant à la différence d'âge moyenne, elle est de 5.28 ans (5.32 si l'homme est plus âgé, 5.64 si la femme est plus âgée). Dans 34 des 127 mariages, la femme était plus âgée que son mari, et dans 3 cas, les époux avaient le même âge.

Si on examine les naissances et les décès selon les mois pour la période 1950-1959 et selon les années, on constate que:

- les naissances sont survenues surtout de janvier à avril inclusivement, et à un moindre degré en juillet, août et septembre;

- il y a eu deux baisses de naissances en 1952 et 1955 (mais ceci peut être dû aux lacunes des registres);

- Les décès furent beaucoup plus nombreux en mars et avril à cause d'une épidémie de rougeole en 1952;

- les décès furent nombreux en 1952 à cause de l'épidémie (49 décès en 1952 dans la région de la baie d'Ungava); en 1950 et en 1956, le nombre de femmes décédées est de beaucoup supérieur à celui des hommes;

- si on excepte l'année 1952, on note la régularité des décès chez les hommes et au contraire des variations importantes chez les femmes.

B. LES STRUCTURES RESIDENTIELLES DES INUJJUAMIUT (1920-1970)

Hypothèse et méthodologie

La modification diachronique des structures résidentielles inuit peut être liée au jeu simultané de deux types de mobilité des camps et des individus: mobilité géographique suivant des cycles courts ou des cycles longs, et mobilité structurelle à courte et à longue échéance.

On peut illustrer la mobilité géographique à cycle court par les déplacements saisonniers autour d'un camp d'hiver servant de lieu de résidence privilégié (et que nous prenons

comme point de référence).

Exemple: Nuvussiq: camp d'hiver de référence;
Quvvik et Ajuraq: camps auxiliaires principaux.
Trois autres camps saisonniers moins fréquemment utilisés sont aussi mentionnés.

La mobilité géographique à cycle long réfère aux changements périodiques de lieu de résidence hivernale i.e. du passage d'un cycle court à un autre, passage qui correspond généralement à un changement de région.

L'autre type de mobilité, dite structurelle, refère plus précisément aux modifications de la composition interne des camps en terme de maisonnées (unité de résidence). Ces modifications peuvent aussi être considérées à court et à long terme.

Le court terme correspond aux modifications concommi - tantes à la mobilité géographique: les changements de camp entraînaient souvent des restructurations des camps saison - niers: scissions et regroupements différents.

Les modifications structurelles à long terme réfèrent au vieillissement naturel de la population et à la scission des maisonnées consécutives au départ des membres adultes fondant de nouvelles maisonnées (illustration par le cycle des maisonnées).

Pour vérifier cette hypothèse complexe, nous nous proposons de faire une analyse combinée de cinq corpus de données: histoires résidentielles individuelles, généalogie, toponymie, registres officiels et listes de populations. Trois types d'informations relient ces corpus les uns aux autres: des noms de personnes, des noms de lieu et des dates. L'objectif global de cette compilation est donc d'établir aussi précisément que possible: qui est où, et quand. Les histoires résidentielles individuelles devraient fournir le canevas de base pour vérifier l'hypothèse: elles décrivent, avec plus ou moins de précision, les déplacements successifs des informateurs en ayant comme points de référence les camps d'hiver; elles contiennent en outre pour ces camps d'hiver, les listes des Illugatiit (compagnons de maisonnée) et des

Nunaqatiit (compagnons de camp - chefs de maisonnée). Trois séries d'événements chronologiquement datés devraient permettre de situer l'époque de la résidence dans tel ou tel camp: a) événements familiaux (naissances, mariages, décès inscrits dans les registres); b) événements relatifs aux allochtones (ouvertures et/ou fermetures d'agences privées et/ou gouvernementales); c) autres événements significatifs (achat de bateaux, naufrage de Nascopie, disparition de chassuers, déménagement important). La grille chronologique constituée par les catégories b et c est utilisable avec tous les informateurs et est complétée par celle de la catégorie a établie pour chacun des informateurs.

La toponymie sert à préciser les lieux géographiques précis ayant servi de sites de campement et à fournir quelques indications portant sur les ressources disponibles à cet endroit et dans les lieux nommés avoisinants.

La généalogie devrait permettre l'étude des structures de parenté des camps, dans l'espace et dans le temps, alors que registres et listes de population contiennent de précieuses informations sur la datation précise des événements familiaux et devraient permettre de reconstituer la population probable des camps à tel ou tel moment.

Le choix d'Inujjuaq comme lieu d'expérimentation repose sur plusieurs raisons d'ordre pratique plutôt que sur des justifications théoriques. Les histoires résidentielles constituent le noeud de toute la reconstruction et leur interprétation pose un problème délicat pour l'identification précise des individus et des lieux. J'ai fait les histoires résidentielles d'Inujjuaq et je connais relativement bien les lieux et les gens mentionnés. D'autre part, les registres officiels anglicans datent de 1927 et c'est a Inujjuaq que furent établies les premières listes officielles de population (1941 et 1947).

Les aspects négatifs de ce choix sont les suivants: un groupe de familles furent déménagées d'Inujjuaq vers Grise Fjord (Resolute Bay) et vers les Iles Belcher au début des années 50, ce qui limite la reconstruction et sa valeur. D'autre part les liens d'Inujjuaq avec les villages voisins de Puvirnituuq et de Kuujjuaraapik sont nombreux et il n'est

guère possible de rechercher dans ces villages, et de les inclure dans notre étude, les informations qui pourraient compléter et, en certains cas, confirmer ou contredire nos conclusions.

Compte tenu des analyses partielles et un peu superficielles effectuées en 1969 et 1970 sur les histoires résidentielles individuelles recueillies à Inujjuaq il est possible d'établir à titre de première approximation, que la population d'Inujjuaq a occupé, au cours des années 1920 à 1970, près d'une vingtaine de campements d'hiver. Ces campements ne paraissent pas avoir été tous occupés simultanément et on peut évaluer à environ une dizaine le nombre de camps d'hiver dont l'existence fut à peu près stable. (Il convient de distinguer camp et campement. Je restreins la notion de campement à sa dimension géographique alors que j'utilise le terme "camp" pour désigner le groupe d'individus partageant un même campement). Le mouvement général des camps, au cours de la période considérée, peut être qualifié de centripète: la tendance a été vers l'élection d'un campement situé de plus en plus près des agences allochtones établies à Inujjuaq. Je ne peux pas, pour le moment, préciser davantage le rythme et les modalités de cette convergence spatiale, mais en 1970, tous les campements avaient été abandonnés, à l'exception d'un seul sis à cinq milles du village, Qurnguq.

Les conditions matérielles et idéologiques qui ont abouti à la formation des agglomérations villageoises actuelles sont assez bien connues, et vont de la détérioration rapide des réserves animales terrestres et maritimes jusqu'au sentiment paternaliste de l'administration gouvernementale, en passant par l'attitude ambiguë et souvent contradictoire des agences privées (commerce et église): protection et agression.

La méthodologie spécifique à mon projet de thèse est assez complexe, en ce qu'elle inclut un ensemble de techniques et de procédés empruntés à l'informatique, à l'ethnohistoire et à l'ethnologie en général. Ce sont évidemment les techniques informatiques qui exigent les protocoles les plus explicites et les plus complexes. Cependant leur valeur d'utilité ne peut pas dépasser la valeur des corpus dont ils servent à systématiser le contenu et le traitement. Il faut donc faire une critique sérieuse des documents utilisés, critique interne

d'abord: techniques de collecte et de transcription; critique externe: compétence du collecteur et des informateurs, et comparaison avec d'autres corpus fournissant des données comparables.

La confection des protocoles de traitement suppose un certain nombre d'étapes essentielles: établissement des hypothèses spécifiques, choix des variables pertinentes, plan de codification des variables, format des dossiers et des fichiers correspondants, contrôle de l'uniformité de la codification et de la transcription sur cartes perforées; traitement de vérification pour faire ressortir les contradictions, les inconnitês et les informations manquantes ou invérifiables.

Une fois montés et vérifiés les fichiers commencent le traitement proprement dit en fonction des hypothèses énoncées, et enfin il faut réévaluer l'ensemble de la démarche en rapport avec l'interprétation possible des sorties fournies par l'ordinateur.

TABLEAU I

Population inuit du Nouveau-Québec

Evaluation de Jens Haven 1773

Orthographe J. Haven	Orthographe normalisée	Situation	Maison	Iglou	Population estimée
Killiniq	Killiniq	Port Burwell Cape Childley	5		100
Kangivak	Kangiva	Abloviak Fjord George River Kangirsualuj-juaq	1	15	170
Tessiugak	Tasiujaq	Leaf Bay		20	200
Aukpaluk	Aupaluk	Hopes Advance Bay		20	200
Ungava	Ungava	Nord Payne Bay		20	200
Tuak	Tuvaaluk	Diana Bay Koartak (Quartaq)		10	100
Aiviktok	Aivirtuq	Sud Stupart Bay Wakeham (Kangirsujuaq)		30	300
Novongok	Nuvuk	Ouest Ivujivik			390
Igluarsome	Illukutaaq	près Cape Smith			
Ittibime	Itivimi	Côte est Baie d'Hudson			
				Total:	1660

TABLEAU II

Population inuit du Nouveau-Québec

Estimé de A.P. Low 1895

Régions	Familles	Pop. estimée
De Cape Chidley (Killiniq) à Cape Hopes Advance (Quartaq)	51	255
Aux environs de Cape Hopes Advance (Quartaq)	30	150
De Stupart Bay (Wakeham - Kangirsujuaq) à Wolstenholme (Ivujivik)	80	400
De Wolstenholme (Ivujivik) à Great Whale River (Kuujjuaraapik)	80	400
	241	1205

TABLEAU III

Evolution de la population inuit du Nouveau-Québec

Site \ année	1927	1931	1941	1951
Killiniq	140	107	64	21
Kangirsualujjuaq		86	108	129
Kuujjuaq				287
Tasiujaq	702	288	257	
Kangirsuk		116		306
Quartaq		105	357	
Kangirsujuaq		122	68	73
Salluit	400	120	145	162
Ivujivik	225	79	148	103
Tujjaat (Nott. I)			(24)	
Qikirtajuaq	60	60	125	127
Puvirnituuq		150	181	171
Inujjuaq	225	225	402	473
Tasiujaq		60	55	49
Kuujjuaraapik	200	140	160	141
Qikirtait	100	150	150	170
Mailasikkut	50	40	1	32
	2102	1848	2221	2244

N.B.- Les chiffres soulignés sont des populations estimées.

TABLEAU IV

POSTES	1951	1954	1961	1964	1966	1967	1968	1969
Killiniq	21	21	33	85	99	93	101	148
Kangirsualujjuaq	129	125	144	120	157	176	180	186
Kuujjuaq	287	297	397	548	499	550	544	523
Tasiujaq	306		82	50	45	40	62	59
Kangirsuk		209	107	132	164	171	171	178
Quartaq			72	80	79	76	77	84
Kangirsujuaq	73	78	109	134	159	170	173	183
Salluit	162	162	246	309	306	326	341	287
Ivujivik	103	103	95	130	109	115	109	114
Qikirtajuaq	127	127	-	-	-	-	-	-
Puvirnituuq	171	138	429	531	549	573	581	586
Inujjuaq	473	455	378	389	400	418	435	448
Tasiujaq	49	49	-	-	-	-	-	-
Kuujjuaraapik	141	142	387	450	472	501	520	508
Qikirtait	170	185	180	176	185	194	213	207
Mailasikkut	32	34	30	30	33	40	40	50
TOTAL	2244	2125	2689	3164	3256	3443	3547	3561

Population par Village.
Données disponibles.

TABLEAU V

ANNEE	NAISSANCES			DECES			TAUX
	Total	H	F	Total	H	F	Mortalité Inf. /1000
1950	92	49	43	13	4	9	141.3
1951	96	55	41	17	10	7	177.08
1952	80	37	43	13	6	7	162.5
1953	102	51	51	19	10	9	186.2
1954	101	56	45	10	5	5	99.0
1955	78	32	46	18	10	8	230.7
1956	95	47	48	28	12	16	294.6
1957	114	68	46	17	11	6	149.1
1958	121	53	68	26	12	14	214.9
1959	101	53	48	10	4	6	99.0
Total	980	501	479	161	84	87	164.2
1950-58	879			151			171.7

Tableau V: Taux de Mortalité Infantile par année.

TABLEAU VI

AGE \ REGION	REGION	REGION A	REGION B	REGION C
	TOT 3561 % H 100% % V 100%	1799 50.52 100	846 23.76 100	916 25.72 100
0 - 19	TOT 2026 % H 100% % V 56.9	1005 49.6 55.9	489 24.14 57.8	532 26.26 58.1
20 - 59	TOT 1392 % H 100% % V 39.1	738 53. 41.	320 23. 37.8	334 24. 36.5
60 et plus	TOT 143 % H 100% % V 4.	56 39.16 3.1	37 25.87 4.4	50 34.97 5.4

Répartition Age-Région (1969).

TABLEAU VII

		0 - 19	20 - 59	60 +	TOTAL
A	H	525	388	30	943
	F	480	350	26	856
	S-R	912	902	866	908
B	H	233	174	20	427
	F	256	146	17	419
	S-R	1098	839	850	981
C	H	257	167	17	441
	F	275	176	33	475
	S-R	1070	1000	1941	1077
TOTAL	H	1015	729	67	1811
	F	1011	663	76	1750
	S-R	996	909	1134	972

Sex-ratio (femme pour 1000 hommes)
par groupe d'âge et par région.

L'examen des décès en fonction de l'âge au décès révèle que la courbe de mortalité pour les hommes est à peu près constante entre 10 et 49 ans, elle atteint un sommet pour la classe d'âge 50 - 54, redescend légèrement puis remonte pour la classe de 70 ans et plus. Au contraire pour la femme, la courbe passe par un creux de 5 à 25 ans; il y a deux sommets; classes de 30-34, et de 40-44 ans, explicables peut-être par les décès consécutifs à un accouchement. La courbe redescend ensuite jusqu'à la classe 55-59, et remonte légèrement par la suite. Si l'on ne tient pas compte de la mortalité infantile, l'âge moyen au décès est de 33 ans pour les hommes et 36 ans pour les femmes.

En résumé, la population autochtone est en pleine expansion, avec un taux de natalité très élevé, et malgré des taux de mortalité générale et de mortalité infantile assez élevés. Le déséquilibre des sexes (femmes moins nombreuses) reste une énigme. Les naissances surviennent surtout en hiver, ou à la fin de l'été, et les décès à la fin de l'hiver (mars, avril, mai).

L'expansion démographique de 1950 à 1970 s'explique à l'aide de plusieurs faits. Des dispensaires furent ouverts dans la plupart des villages en formation à partir de 1949, et une attention particulière fut apportée aux soins pré-et post-nataux, en même temps que des subsituts au lait maternel et des céréales moulues devinrent disponibles, permettant de réduire sensiblement la mortalité infantile. D'autre part l'évacuation par avion, vers les hôpitaux du Sud, des malades gravement atteints et des cas probables d'accouchements difficiles a permis une réduction de la mortalité générale. L'aide directe, d'abord en nourriture et en équipement de chasse et pêche, puis sous forme monétaire, a permis en même temps la suppression des famines. Un effet subséquent des changements dans les possibilités d'alimentation des nouveaux-nés (lait en poudre) a été la réduction de la période d'allaitement maternel et, donc, de l'intervalle intergénésique, augmentant ainsi le taux de natalité. L'effet global de tous ces facteurs fut tel que de 1951 à 1969, le taux d'augmentation de la population a été d'environ a.6% par année, entraînant un doublement de la population en moins de 30 ans.

Même s'il y a eu quelques mouvements migratoires entre

1950 et 1970, ils ont eu peu d'influence sur la population. Les déplacements intervillage sur le territoire néoquébécois sont toujours assez nombreux, soit par motoneige, Peterhead, ou le plus souvent par avion. Ils sont généralement de courte durée, pour des raisons familiales, sociales ou économiques. Les seuls phénomènes migratoires intraterritoriaux dignes de mention sont les disparitions de camps permanents distincts du village. Inujjuaq fut le dernier poste à posséder des camps satellites permanents. Le mouvement de concentration autour des installations euro-canadiennes y fut plus ou moins arrêté par la volonté d'une administration euro-canadienne en 1957 mais onze ans plus tard, les cinq camps permanents disparaissaient, leurs habitants venant se joindre à ceux déjà établis au village.

1970 ALL-UNION CENSUS OF POPULATION OF THE U.S.S.R. - OBSERVATIONS ON THE METHODOLOGY EMPLOYED TO ENUMERATE THE NORTHERN NATIVE MINORITIES.

G. SUCHARCZUK[1] and W. SLIPCHENKO[2]

INTRODUCTION

The purpose of this paper is to present in a preliminary form the main findings of the examination of the 1970 Soviet Census as related to native minorities residing in the northern areas of the Soviet Union. The complete results of this study will be published in a report which has been prepared by the writers.

It should be noted that the 1970 Census[3] lists 20 ethnic groups under the term Narodnosti Severa, Sibiri i Dal'nego Vostoka (Nationalities of North Siberia and the Far East), with a separate section for the Eskimosy and Aleuty[4]. Although not all of these ethnic groups are located in what can be termed purely northern areas, they are generally to be found in remote and inaccessible areas of Siberia, the Far East and the European North, and for this reason have been grouped together. They have been designated collectively as the northern native minorities in the study and are composed of the following ethnic groups: Nentsy,

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[3] The concept of nationality (narodnost') will be discussed later.

[4] The Eskimosy and Aleuty were included in the above-mentioned group in the 1959 Census.

Evenki, Khanty, Chukchi, Eveny, Nanaytsy, Mansi, Koryaki, Dolgany, Nivkhi, Sel'kupy, Ul'chi, Saamy, Udegeytsy, Itel'meny, Kety, Orochi, Nganasany, Yukagiry, Negidal'tsy, Eskimosy and Aleuty.[5] Paul Thoe Nielsen, in his article, An Appraisal of the Importance of the National Languages Among the North Siberian People (1972/74) provided an excellent review of the ethnographic and linguistic characteristics of this group.

The purpose of the main report was not only to provide statistical data but to check, wherever possible, for any limitations of this data. No attempts were made to verify the credibility of the 1970 Soviet Census by statistical or demographic analysis of the published results, even though such an analysis would be able to clarify the discussed issues. It was felt that this type of analysis would require a special comprehensive study. However, the relevant results have been checked by computer for internal consistency, and no errors have been detected.

For the purposes of this paper, the organizational procedure, of the Census, its questionnaire, and data collection methods have been reviewed and the tabulation and presentation of the results commented upon generally. It would undoubtedly have been useful to devote some effort to the examination of previous Soviet censuses but lack of time and space prevented this. An examination of these censuses would have given the investigator the opportunity to study the processes of socio-demographic changes among the northern native minorities during the Soviet period, thereby contributing to an understanding of the various problems and features, as well as the results of the 1970 Census. However, the history of the Soviet Population Censuses will be reviewed in the final report.

This paper will, therefore, be limited to a discussion of the following:

(a) The data collection procedures used in the 1970 Census for the general population and for the northern native minorities residing in "regions of the Far North and remote and highly inaccessible (mountainous, taiga, etc.) centres of the U.S.S.R (hereinafter referred to as "regions of difficult accessibility"); and

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[5] The names have been transliterated from the Russian and are in the plural form.

(b) The results of a cursory examination of the variables of the 1970 programme processed for the northern native minorities in the Census.

ORGANIZATION OF THE 1970 CENSUS

This review of the organization of the 1970 Census covers the preparatory stage and the enumeration procedures, including preliminary inspections, the choice of enumerators, the actual enumeration, and post-census inspections.

Preparatory Stage

Once the official announcement was made, numerous meetings and scientific conferences were held to discuss the organization of the Census, the questionnaire to be provided, and the publicizing of the Census.

A pretest was conducted in March 1967 for 836,000 individuals from nine regions of diverse geographic, economic and social backgrounds (Leedy, 1969). It was decided on the basis of the results of this pretest to reject the self-enumeration method on a wide scale and to delete questions about fertility, migration and housing.

The next two years were devoted to the preparation of lists of population places; the correction and updating of maps; the verification of all administrative unit boundaries; and the confirmation of the accuracy of urban dwellings and village household registers. All administrative units were subsequently divided into census, instructor and enumeration districts.

This preparatory work was also accompanied by a massive publicity campaign which included the distribution of millions of brochures, the extensive use of the media to explain the goals and methodoloty of the Census, and the liberal use of propagandists to elucidate upon the technique and importance of the census. This detailed approach to the preliminary stage was obviously an attempt by Soviet officials to ensure universal coverage and the validity of responses. It would be in the modus operandi, however, that the effectiveness of these procedures would be determined.

Enumeration Procedure

Normal procedures called for preliminary inspections, which would require enumerators to tour their districts (four days before the actual enumeration) to check the maps and lists of dwelling units; to verify the address and name of the head of the household; to arrange an enumeration appointment; and to leave census forms for the exceptional cases of self-enumeration (the number of self-enumerated questionnaires was not published). Preliminary inspections, however, were not carried out in the rural settlements of the northern people (Kargapolova 1969). Since approximately 123,000 individuals (out of a total of approximately 150,000) live in rural settlements, the lack of preliminary inspections could adversely affect the coverage of the northern native population.

Information available from Soviet sources concerning the background and work of the enumerators, and the "canvasser" approach to record the information, particularly in the North, is practically non-existent. According to Soviet sources, the enumerators in the central regions of the country had appropriate educational and occupational backgrounds, being school teachers, university students, students from special statistical vocational secondary schools, as well as white-collar employees from offices, factories, collective and state farms. Enumerators were selected by local statistical offices and approved by local authorities. Each census-taker had to enumerate 85 persons daily (on the average) in urban areas and 72 persons in the rural areas.

There is no doubt that the geographic, climatic, ethnic and linguistic conditions in the North contributed to the difficulties of the enumerators and added to the problems of coverage and response errors. The way of life for most of the northern minorities is primarily nomadic and approximately one-third of the people do not know Russian, even as a second language. The single Soviet source found on this subject, Kargapolova, stated on the eve of the Census that the criteria for the selection of the enumerators in the "regions of difficult accessibility" would differ from that employed in other parts of the Soviet Union. In the North, the enumerators should be, ideally, literate (sic), well-disciplined, physically fit, well-acquainted with the local conditions and, if possibly, bilingual. It was obvious that all the enumerators were not fluent in the language of the northern minorities since Kargapolova also mentioned the need for interpreters.

A detailed search failed to bring to light any Soviet concern regarding the possibility of response or coding errors where interpreters were used. It is reasonable to assume, nevertheless, that such errors occurred. The interesting question is, of course, the magnitude of these errors and how the Census results were "adjusted" to cover them. As there is no information available on this issue and on the training and aptitudes of the interviewers themselves, it is difficult to attest to the quality of the enumeration.

Actual Enumeration

Under normal conditions on the day of the Census, January 15, 1970, enumerators would have begun to visit each dwelling unit and completed the census schedules by a personal interview. As it was, however, the census-takers were not required to actually interview all of the population. If one, or more, of the permanent residents were unavailable, information could be obtained from other members of the family. If, on the other hand, the entire family or those single persons living alone, were absent, the required information could be collected from neighbours, housing administration records or from the local authorities. Obviously, if this procedure were not employed carefully, there could be errors in the responses, the magnitude of which, however, has not been discussed by Soviet demographers.

The above procedures were applied in the "regions of difficult accessibility" where the margins for error could be compounded by other factors. To overcome severe weather and scarcity of appropriate means of transportation, the timing and period of the enumeration differed from one region to another. The end result was that the enumeration period varied from 8 to 30 days in the various remote regions instead of the 8 days allowed for the rest of the country.

Special certificates were given to all the nomadic population who had been interviewed, yet a certain amount of duplication did occur as the groups moved from one area to another (which could have been corrected with post-census inspections).

Post-Census Inspections

Although post-census inspections to discover omitted population were concluded in most parts of the Soviet Union, they were not conducted in the rural settlements

of the "regions of difficult accessibility" (Kargapolova, 1969). This omission undoubtedly limits the reliability and validity of the published data.

Summary

In reviewing the organization of the 1970 Census, there are two major aspects which should be considered when the data, as recorded in the Census on the northern minorities, are studied:

(1) Although Soviet sources would not be prepared to admit that the coverage of the population was not universal, it is almost certain that the combination of objective factors such as difficult accessibility and the different cultural backgrounds of the minority groups, combined with the lack of pre-census and post-census inspections, faulty enumeration procedures with regard to, for instance, absent persons, and possible duplication, has created serious errors in the population coverage.

Generally speaking, however, dispersed and remote locations of human habitation, mobility of population, problems of accessibility, as well as some psychological and cultural barriers between the population (or some segment of it) and the authorities, could prevent complete coverage of population in any country. It is estimated that in Canada, for instance, 2.5-3.0 per cent of the total population was missed for the 1961 Census. The situation is actually compounded when one considers certain age groups. Males from 15 to 25 years of age (a critical age group for labour force statistics and questions on education) were overlooked, resulting in a much higher rate, more than 10 per cent, according to Benyon, Ostry, and Platek (1970). Hauser and Duncan (1959) have observed that the net under-enumeration for small minorities may greatly exceed the average under-enumeration, particularly in less developed countries or regions.

(2) As is well know, the "canvasser" approach has certain advantages, assuming that the enumerators are properly selected and trained, and are, in addition, diligent and conscientious. The disadvantages of this approach can be particularly significant when the enumerators and the respondents belong to different linguistic social and cultural

groups, and consequently, there is a need for interpreters and other "mediators" (leaders of northern native minorities) between the members of the native groups and the census-takers. The disadvantages of the "canvasser" approach in these cases are reflected in the response and coding errors which the Soviet scholars and officials have preferred to ignore.

VARIABLES AND RESULTS

The questions of the 1970 Census are set out in Appendix I and a summary of the answers reported in the Results of the All-Union Census of Population 1970 for the northern native people is set out below.

The questionnaire asked eleven basic questions, but a random sampling of 25 per cent of the general population and the northern native minorities were asked to complete an additional seven questions. In spite of the fact that all 18 questions were presented to the majority of the northern native people, the official summary of the Census contains only a modest amount of information relevant to these ethnic groups. This information is focused on the following variables:

1. Family
2. Sex
3. Age
4. Nationality
5. Mother tongue and knowledge of a second language
6. Education
7. Geographic location

Family

The first question of the 1970 Census, designed to discover the size and structure of Soviet families, defined a "family" as a group of persons fulfilling the following three functions:

(a) common habitation;

(b) existence of "blood" relationships or relationships through marriage; and

(c) common budget (Shiskina 1969).

Tables 30 and 31 of Volume VII deal with the families of 12 northern minorities: Koryaki, Mansi, Nentsy, Khanty, Dolgany, Chukchi, Evenki, Eskimosy, Itel'meny, Nganasany, Eveny and Sel'kupy, which are national homogeneous. These tabulate the distribution of such families according to their size, urban/rural cleavage and location in one of the administrative units of the Russian Republic. Structurally, the information presented in these two tables can be reproduced in the following form:

	Size of Families of A in M										Average Size
		2	3	4	5	6	7	8	9	10 and more	
Total no. of families in A in M											
Urban families of A in M											
Rural families of A in M											

Key:

A - Name of Minority

M - Name of a geopolitical unit of residence.

This information could have been very meaningful if the number of "mixed families" had been made known, since ratio between nationally homogeneous and mixed marriages is probably the best indicator of the assimilation of any minority. It is possible that a further demographic study will be able to estimate this ratio.

Sex

Numerous tables in Volume IV provide information about the sex distribution of the northern native minorities and its

correlation with the geographic distribution, mother tongue, knowledge of a second language and education. Tables 4 and 5 of Volume IV supply the following information:

(1) Sex distribution of each of the 22 minorities.

(2) Sex distribution of the urban population of each of the 22 minorities.

(3) Sex distribution of the rural population of each of the 22 minorities.

(4) Male population of each of the 22 minorities in urban and rural areas -

(a) whose mother tongue is: I - native language; II - Russian; III - other;

(b) whose second language is: I - native language; II - Russian; III - other.

(5) Female population distributed according to the same variables as the male population (see (4) above).

The sex distribution according to the level of education is discussed later in this paper, and an analysis of the education variable provided.

Age

In reporting their age, Soviet citizens were required to include the year and month of their birth. The purpose of this procedure was to insure accuracy of responses (Introduction to Volume II - Results of the All-Union Census of Population, 1970) It would be doubtful, however, whether the elder generation of northern native people were able to report their age with complete accuracy.

Table 33 of Volume IV presents the age distribution and correlation to linguistic variable of seven minorities: Dolgany, Koryaki, Mansi, Nentsy, Khanty, Chukchi and Evenki.

Nationality

The question of nationality is undoubtedly the most difficult one in the entire census programme. Serious conceptual and semantic problems are raised, particularly in respect to small minorities. As Bruk and Kozlov, both well-known

Soviet ethnographers, have admitted (1967), this question was widely misunderstood not only by the respondents but also by the census-takers. D. Mazur (1967) suggests on the basis of his analysis of fertility among ethnic groups in the Soviet Union, that the definition of nationality in the Soviet censuses caused serious confusion.

According to E. Glyn Lewis (1972), Soviet theory of the development of human communities distinguishes between three types of human collectivities: narod, associated with a primitive and communal system, representing small clans and tribal groups; narodnost', a more developed type of human collectivity, but no longer based on blood relations, which has a degree of linguistic, cultural and territorial unity, as well as certain economic tied; and natsiya, the most stable type of community, characterised by its own language, common territory, economic and political life and basic cultural self identity. According to this theory, the northern native minotirites belong to the first category of ethnic groups and nationalities. The validity of this theory is not in question here, but rather the terminology which has undoubtedly penetrated into the ordinary language of the Soviet people and become associated with certain kinds of ethnic groups and nationalities which reside in the Soviet Union.

The Soviet citizens were asked about their natsional'nost. This term is associated with the concept of the natsiya (which can be probably translated into "nation") and which is usually reserved for Russians, Ukrainians, Armenians, Georgians, etc. This formulation, as Bruk and Kozlov (1967) remarked created the possibility that the small minorities would identify themselves and/or be identified with some large nationality and thus the picture of the Soviet ethnic mosaic would be distorted.

According to Zinchenko (1969), the procedures to deal with the question of nationality in the 1970 Census were as follows. The editors of the Census compiled a list of 122 nationalities and ethnic groups. The respondents' answers, which implied a much larger number of nationalities, were, however, classified subsequently in accordance with this list. Therefore, the ethnic division in the Census reflects not necessarily the ethnic identity of the Soviet people, but rather some unclear criteria of the Soviet authorities.

Parents specified the nationality of their children. In cases where parents belonged to different nationalities, and themselves had difficulty in reporting the nationality of their children, it was recommended that preference be given to that of the mother.

Table I of Volume IV records:

(a) The absolute number of the members of each of the 22 northern minorities in 1959 and 1970;

(b) The percentage of those members of each of the 22 northern minorities claiming native language as mother tongue in 1959 and 1970;

(c) The percentage of members of each of the 22 northern minorities whose second language is I - Russian, II - other.

Table 2, Volume IV, presents the total population of the northern minorities (excluding Eskimosy and Aleuty) residing in the Russian Republic in 1959 and 1970, as well as the percentage of the northern native population in the total population of the Russian Republic 1959 and 1970.

Mother Tongue and the Knowledge of a Second Language

The language entered was the one the respondent knew best or which he usually employed at home. The "mother tongue" of children not yet able to speak was entered as that normally used at home. It can, however, be assumed that "mother tongue" is still associated with its literary meaning, i.e. the language spoken by the mother. According to the rules of the Census, the knowledge of a second language, spoken by the Soviet people, meant at least an ability to speak it freely. No tests were administered to confirm or reject the claim of the respondents about their linguistic abilities.

Education

Tables 39 and 59 of Volume IV deal with the educational level of seven minorities, Dolgany, Koryaki, Mansi, Nentsy, Khanty, Chukchi, and Evenki. The educational data has been tabulated in such a way, that it is difficult to determine the distribution of the minorities according to the levels of their education. Table 39, Volume IV, does not deal with the whole population of a given minority,

but only with that part which resides in those geo-political units which bear the name of the minority, as for instance, the Taymyrskiy (Dolgano-Nenetskiy) National Okrug, Evenkiyskiy National Okrug, Koryakskiy National Okrug, etc.

This segment of the population was divided into the following categories:

(1) The total population in 1959 and 1970;

(2) The male population in 1959 and 1970;

(3) The female population in 1959 and 1970;

(4) The urban population in 1959 and 1970;

(5) The male urban population in 1959 and 1970;

(6) The female urban population in 1959 and 1970;

(7) The rural population in 1959 and 1970;

(8) The male rural population in 1959 and 1970;

(9) The female rural population in 1959 and 1970.

The educational categories are as follows:

(a) High school;

(b) High school, incomplete;

(c) Secondary school, specialised (vocational);

(d) Secondary school, general;

(e) Secondary school, incomplete; and

(f) Elementary school.

The table provides the distribution of members of each category, who are 10 years of age or older, according to the levels of education. This distribution is not in absolute numbers but per 1000 persons.

We know from other tables that the age distribution of the entire minority group, as well as the population of the group for a specific area. What we do not know, however, is the age distribution of a minority group within a specific territory. To interpret the results of this table, it would be necessary to make certain demographic assumptions which may or may not be correct. The table does allow, nevertheless, comparisons between 1959 and 1970.

Table 58 of Volume IV deals with the education of the working population of the northern native minorities. (It is not clear whetehr seasonal or part-time workers were included in this category). The working population was divided into:

(a) Men and women - urban and rural;

(b) Men - urban and rural;

(c) Women - urban and rural;

(d) Men and women - urban;

(e) Men - urban;

(f) Women - urban;

(g) Men and women - rural;

(h) Men - rural;

(i) Women - rural.

Members of all these categories were classified according to the educational levels (as in Table 38), not in absolute numbers but per 1000 employed persons. The nature of this tabulation is limited, since the absolute numbers of workers in any class of the population remain unknown.

The Geographic Location

In terms of geographic distribution, the northern minority population was classified according to two dimensions:

(1) the urban/rural cleavage, and

(2) the dispersion in various administrative or geopolitical units of the Russian Republic.

(1) The distinction between the urban and rural settlements.

In spite of the extensive use of the categories "urban" and "rural" in the tabulation of the results of the 1970 Census, the distinction between them is far from clear. It should be stressed that the definitions of "city" and "village" differ from one Soviet Republic to another. Since the northern minorities are located in the Russian Republic, our discussion can be limited to the definitions prevailing in this Republic.

Soviet authorites stipulated certain objective and clear-cut criteria to distinguish urban from rural areas in the Russian Republic. The problem is that, in numerous cases, this distinction was also made on the basis of other seemingly arbitrary and unspecified criteria. According to Podiachikh (1961), the following types of settlements have been considered as cities in the Russian Soviet Federated Socialist Republic since 1958.

(a) Towns proper - with a population no less than 12,000, provided that no less than 85 per cent of the population is engaged in non-agricultural occupations (this rate would include families of the workers and employees);

(b) Workers settlements - with a population of no less than 3,000 persons, provided that no less than 85 per cent (together with their families) are workers and employees;

(c) Resort places - with a population of no less than 2,000 and provided the number of visitors (for vacations and medical care) is no less than 50 per cent of the permanent population;

(d) Settlements around important construction projects - having a possible population of less than 3,000 persons. (No definition can be found as to what constitutes an important construction project);

(e) Settlements, particularly in the Far North and Far East which constitute economic and cultural centres - the operational definition of the terms "economic centre" and "cultural centre" remain unknown.

With no very clear criteria for distinguishing between urban and rural areas, particularly in the North, the significance of the comparisons between the urban northern indigenous population and the rural northern native population is limited.

(2) The geographic dispersion according to administrative units

The summary of the 1970 Census classifies residences of the northern minorities according to four types of geo-political units:

(1) Autonomous republic;

(2) Krai (territory);

(3) Oblast (province); and

(4) Natsion'alnyy okrug (national area).

All units are under the direct administration of a Republic[6], in this instance, the Russian Soviet Federated Socialist Republic.

Table VI, Volume IV, correlates the geographic distribution of the northern native minorities with their linguistic characteristics. The Table shows each of the minorities residing in each of the administrative units as urban and rural population, and tabulates the number of urban and rural respondents whose mother tongue is I - native language, II - Russian, III - other; and whose second language is I - native language, II - Russian, and III - other.

Summary

In commenting upon the results of the questions as reported in the All-Union Census, it should be noted that certain concepts and terms used could create serious errors of response: the concept of nationality, for example, was employed, it is considered, in a misleading way. The term "mother tongue" was also ambiguous since it could have designated:

(a) the language of the cradle;

(b) the language best known; and

(c) the language most often used in normal domestic activities.

The concept of "knowledge of a second language" was in our view very vague, since the criteria, i.e. ability to speak it freely, was not only very broad, but could have been interpreted in different ways by different respondents. Moreover, even assuming taht no serious errors of coverage and response were committed, data about the northern native population require further elaboration and investigation. In addition:

(1) Educational information is limited; and

(2) The distinction between urban-native population and rural-native population requires a further detailed research.

CONCLUSIONS

As was indicated earlier, the quality of the data on the northern native poeple could have been negatively affected by the organizational procedures of the 1970 Census. The analyses of the variables of the Census, and of the tabulation and presentation of the results which are relevant to the northern native population, also bring into question the reliability of the results. Nevertheless, the statistical data available in the Census represent the best source of information about the Soviet northern native minorities published to date.

APPENDIX I

THE PROGRAMME OF THE 1970 CENSUS

The whole population of the Soviet Union was asked eleven basic questions while a random sample of 25 per cent was asked to complete seven additional questions. The population of the "regions of difficult accessibility", containing the majority of the northern native population, was asked all 18 questions. The questions were as follows:

(1) Relationship to the head of household.

(2) For permanent residents who are temporarily absent: (a) the reason for the absence; (b) the length of the absence.

(3) For temporary residents: (a) place of permanent residence; (b) length of time absent from the permanent residence.

(4) Sex.

(5) Age (as of last birthday).

(6) Marital status at the present time.

(7) Nationality (foreigners to indicate citizenship).

(8) Native language (indicate also the second Soviet language in which you are fluent).

(9) Level of education attained (for a completed elementary education but uncompleted secondary education, indicate grade (course) attending presently, or the number of grades (courses) completed).

(10) Type of educational institution attending presently (university, technical college, school, course, etc.)

(11) The principal means of subsistence.

(12) Place of work: name of enterprise, institution, and collective farm, or where located if self-employed.

(13) Occupation at work (position or work performed). Pensioners should list previous occupation.

(14) For workers employed less than one year in 1969: indicate whether you worked permanently, seasonally, or temporarily, and indicate how many months worked during 1969.

(15) Social group (wage worker, salaried employee, collective farm worker, artisan, peasant with individual farm, minister or church official).

(16) Length of time lived continuously in the locality.

(17) For a person residing in the present locality less than tow years: indicate former residence.

(18) Reasons for changing residence.

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NORTHERN POPULATION WORKSHOP I

OBJECTIVE III
DAY III

To discuss ways of gaining the cooperation of the native people and other northerners in future demographic research by:

inviting native people to comment on perceived demographical problem areas with respect to their community, and

by having researchers in turn identify the use to be made of statistical compilations in relation to the problems and the benefits to be derived from such compilations by people in the North.

CHAIRMAN: Professor W. B. Kemp.

THE NEED FOR DATA: BALANCING THE RIGHT TO PRIVACY WITH THE NEED TO KNOW

Le besoin de données: comment équilibrer le droit à la vie privée avec le besoin de savoir

NANCY HOWELL[1]

On the one hand, conference participants have told of northern communities that have been "studied to death", of the rights to privacy of the residents that have been infringed, and of at least one large-scale government programme to collate data from a number of administrative sources that has been cancelled on the grounds that it constitutes a level of governmental surveillance over the details of individuals' lives which would not be tolerated in the south, and is, therefore, inappropriate for the north. On the other hand, conference participants have told of difficulty and inability to use large-scale data collections on demographic conditions of the north, which have tended to be inaccurate and incomplete. To make a reasonable assessment of the rights of government or researchers to intrude upon northern peoples, we must consider explicitly the uses to which such data may be put.

The central scientific question of demography at the present time is determining the range of human variability in age-specific patterns of fertility and mortality. Stable population theory specifies the consequences of given schedules of fertility and mortality in precise ways: the empirical question of great interest in the Canadian north is whether the extreme environmental conditions there have produced patterns of age-specific fertility and mortality that extend the known range in any significant way. For these purposes, the existing data base is sufficient to establish that there is nothing remarkable about the people of the north, at least under current conditions. Research procedures that are costly to the people studied can not, therefore, be justified on the grounds of the extreme value of the study to science.

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Why, then, if there are no pressing scientific questions to resolve, do we still hear concern about the inadequate data base? The need for data seems basically to be a practical one, and decisions about the rights of researchers to impose upon the subjects of their research should be judged by utilitarian rather than scientific criteria. The government has a pressing need for a rational basis for the planning and administration of welfare, housing, social control and other programmes in the north. Whether and how those programmes should be administered are political questions, and the decision to "inflict" research upon people must also be, in essence, a political question. Participation in the resolution of this question by representatives of the communities to be studied, who can balance the costs to the people of being studied against the costs of the government not having the information needed to plan programmes efficiently, would seem to be appropriate.

RESUME. - D'une part, certains participants nous ont parlé des communautés qui sont la cible de nombreuses études, du droit à la vie privée qui a été violé et d'un programme gouvernemental de grande envergure destiné à assembler des données à partir de sources administratives qui a été annulé pour cause d'immixtion du gouvernement dans la vie privée des individus.

D'autre part, d'autres participants nous ont décrit les difficultés auxquelles ils se sont heurtés et l'impossibilité d'utiliser les données actuelles sur la situation démographique dans le nord parce qu'elles sont trop souvent inexactes et/ou incomplètes.

Actuellement, la démographie tente de déterminer les limites entre lesquelles varient la fécondité et la mortalité humaines. La théorie des populations stables permet de connaître l'évolution d'une population à partir de tables de mortalité et de fécondité pré-établies. L'intérêt d'une étude de la population du nord canadien se situe au niveau de la remise en question des limites mêmes du champ de variation étant donné un environnement particulièrement défavorable à la vie humaine.

Pour ce, la base de données actuelle est suffisante et permet d'établir qu'il n'y a rien de remarquable en ce qui concerne les peuplades nordiques, tout au moins dans les conditions actuelles. Il est donc impossible de justifier des procédures de recherche qui seraient pénibles pour les individus étudiés, par l'extrême importance de leur valeur scientifique.

Pourquoi donc les chercheurs continuent-ils de se préoccuper de la valeur des données de base? Le besoin de données semble être à la base un besoin pratique et ce sont des critères utilitaires plutôt que scientifiques qui devraient décider des droits des chercheurs à importuner les sujets de leur recherche. Le gouvernement a un besoin pressant, dans le nord, d'une base rationnelle pour la planification et la mise en application de programmes d'aide sociale, de logement, de contrôle social et autres. L'opportunité de ces programmes ainsi que leur mise en application sont des questions d'ordre politique et la décision de " faire subir " la recherche aux individus doit être aussi, essentiellement une question d'ordre politique. Il serait donc indiqué que des représentants des communautés destinées à être étudiées participent à la solution de ce problème. Ils compareront les ennuis des enquêtes aux ennuis que le gouvernement aurait à ne pas posséder les informations nécessaires pour planifier ses programmes d'une manière efficace.

SOME CONSIDERATIONS ON POPULATION AND SELF-SUFFICIENCY: NORTHERN QUEBEC

LORRAINE BROOKE[1]

INTRODUCTION

It has become evident during this conference that there is little understanding of the scope and meaning of northern demography. What it is, who should define the problems, how the research should be carried out and the findings applied, are basic questions. Variables such as birth, death, age, sex or movements are important elements towards an understanding of northern people, but exactly why these factors are important and how they relate to the solving of problems identified as relevant by northerners themselves has yet to be developed. It is the role of formal demographic research to describe the attributes that define each of these variables; to determine the relationships between variables; and to explain the processes that create stability or change in one or more of the variables and, consequently, in the population as a whole.

Social demography, on the other hand, attempts to explain what these demographic variables mean with respect to the well-being of a particular population. It describes the relationship between demography, social structure, role and behaviour, and explains the demography-linked processes that create change in one or more elements of the cultural system. The forces that control demographic process must also be accounted for, whether created from within the population itself or introduced from the outside, and they may involve factors ranging from biological productivity to preferred lifestyles.

In order to carry out social demographic studies at least two approaches may be taken. The first is a practical examination of population-related adaptations that are reflected in cultural behaviour. The second is broader and perhaps more practical in that it attempts to analyse direct impacts and changes in the adaptations

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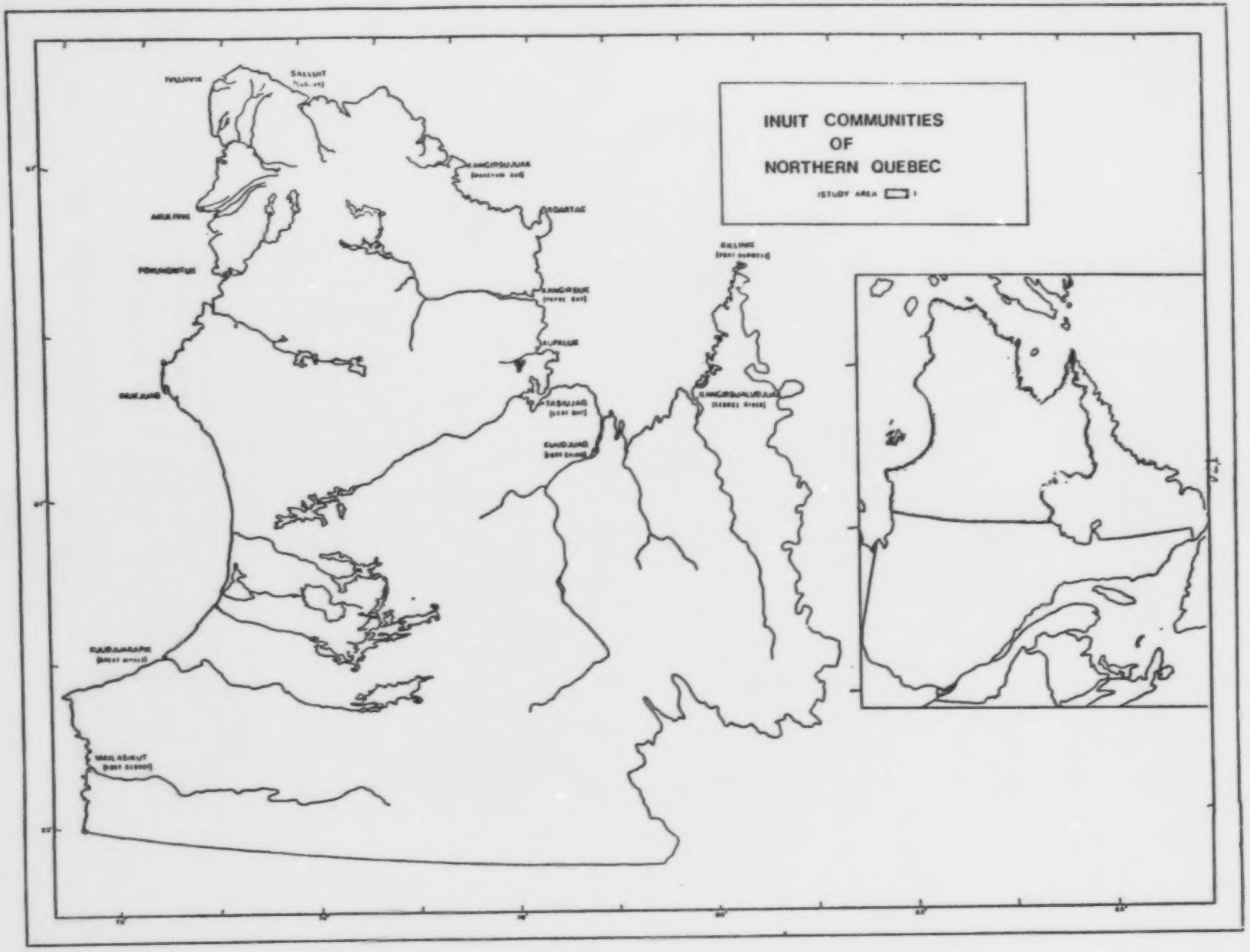
INUIT COMMUNITIES
OF
NORTHERN QUEBEC
(STUDY AREA)

created by external factors. In this regard it is suggested that one appropriate measure of impact can be defined through the processes that affect a population's ability to feed itself. This is perhaps the most basic relationship between demography and the adaptive behaviour of a population in providing the criteria for well-being that must be satisfied first and continuously. It is this population/food relationship more than any other aspect that has become the basic idiom for describing northern life in both popular and scholarly literature. When northern populations are studied or considered, they are usually thought of in terms of a constant struggle for survival, marked by frequent privation and accented by harsh means of population control.

The purpose of this paper is to examine some of the basic elements of the population/food relationship that now exist within the north, partly to refute the old stereotypes, but more importantly, to show that this may be an appropriate time to introduce the new problems created by land claim settlements.

Specifically, the paper will briefly describe and analyse the present situation in northern Quebec in order to establish the potential of a modern Inuit population to feed itself from local resources, and to show how the possibility of continuing this process may be both aided and threatened by the recent settlement of native land claims under the James Bay and Northern Quebec Agreement (referred to from now on as "the Agreement").

Historical Context

The early literature available on the Inuit of northern Quebec dwelt on the problems of food scarcity and privation. More recently, however, descriptions and interpretations of Inuit life have related problems of privation not so much to absolute food scarcity as to difficult circumstances. Though the historical evidence is far from clear, weather and sea ice conditions seem to have been the critical variables. The extreme contours of the shoreline of Ungava Bay coupled with high tides and fierce currents made the search for winter food hazardous and unreliable.

Declines in particular species have in the recent past also had a disastrous effect, although it can be argued

that failure of the caribou in the mid-1900's, for example, was not in itself responsible for the hardships that followed. The fur trapping era which began in the 1920's in northern Quebec profoundly affected the habits and lifestyle of the Inuit. Traditional settlement patterns were transformed in response to the demands of winter trapping. Access to cash, the credit system developed by the Hudson's Bay Company (HBC), and the introduction of "luxury" items all contributed to the increased dependency of the Inuit on the local traders.

In the past, overcoming food shortages was tied to settlement pattern. In the summer, widely-dispersed, family-oriented camps would be formed to exploit a variety of resources such as fish, small game and fowl, sea mammals and caribou. In the fall, there was an emphasis on the exploitation of large marine mammals such as white whales and walrus. Their meat would be stockpiled to supplement the less dependable food sources in the winter when large, multi-family aggregations would be formed centered around winter seal hunting, mainly breathing-hole sealing. Breathing-hole sealing is labour intensive, requiring the monitoring of many holes at one time in order to achieve success. Inclement weather and unstable ice conditions often hampered this activity. At such times, the stored meat from the fall meant the difference between comfort and disaster. When the herds were accessible, caribou supplemented the winter diet.

The internal sensitivity of the annual cycle of activity was broken by the fur trade when outsiders became the primary decision-makers with foreign markets controlling the price of skins and, hence, the cash return to the trapper. The local trade then began to dictate the settlement pattern and seasonal activity. The former large winter aggregations were not adapted to the trapping of fox and small, isolated and widely-dispersed groups made their apperance. The large groupings, formerly associated with the winter, now occurred in the summer around the local trading posts to await the arrival of the supply ships where temporary wage labour would be available. These new patterns did not coincide with the finer adjustments that people had made in the past and, therefore, amplified the difficulties of the natural environment.

Periods of serious food shortages occurred throughout the fur trade era and starvation has been recorded in

both the Hudson Bay and Ungava Bay regions. Disease also contributed to the general debilitation of the population: a measles epidemic in the late nineteen forties for instance, killed many. Further, as increasing dependency on western foodstuffs developed, the Inuit's ability to effectively exploit their environment declined.

This complex process was perceived by the governments of the time as being the result of food scarcity. An example is the relocation of three families (18 persons) from Inukjuaq in 1953 to Resolute Bay. The primary reason given for this move was that the Resolute Bay area represented an underexploited resource area. An underlying reason, however, was undoubtedly to provide cheap labour for the joint Canadian/American weather station at the site (G. Wenzel, personal communication).

The consolidation of outlying camps into centralized communities in the early nineteen sixties, after the collapse of the fur trade, marked a resurgence in population, although since the epidemics of the forties, the population had increased steadily. No firm data exists which would allow for growth projections (J. Légaré, personal communication). Research conducted by R. Duffy in southern Baffin Island, which is a similar case, shows a 4.3 per cent annual growth rate for the years 1961-1971 (personal communication). It would be safe to assume a comparatively healthy growth rate for northern Quebec.

Although settlement patterns during this period remained less well adapted to animal distributions, changes in technology such as more efficient transportation and weapons, allowed for an increasein harvesting. There was a gradual re-establishment of more productive harvesting activity. Since the fur trade, the Inuit have remained locked into a cash economy. More jobs were available in the communities which helped to create a balance between the need for cash and the ability to hunt. Within the context of a partial wage economy, the Inuit were able to apply the new technology and create a measure of self-sufficiency which is the situation at present.

Harvesting Activity as a Measure of Well-Being

An intensive study of the present harvest levels by the

Inuit of Northern Quebec is now being conducted. It will provide a yearly summary of resource harvests from 1974 to 1981. Contrary to what many people believe, the Inuit not only perceive hunting to be a viable economic pursuit and an integral part of their cultural identity, but they continue to actively exploit the resources available to them.

The first report on The Research to Establish Levels of Harvesting by the Native Peoples of Northern Quebec - Inuit was completed in June 1976. It provides a description of the total harvest for a one year period (1974-1975) for the Inuit of northern Quebec. Table 1 provides a breakdown of the participating community populations and details the categories used in the research. It was found that the 646 hunters active in 1974-1975 harvested 3,723,784 pounds of edible food. Table 2 presents a more precise account of this harvest. In order to obtain a general estimate of the amount of meat available on a per capita basis, the population was redefined by consumption units (c.u.'s). This is an approximate measure which allows for the differing food needs of a population according to age. Individuals 15 years and over were assigned 1 full c.u.; those 14-7 years were assigned 2/3 c.u.; and those 6-0 years were assinged a value of 1/3 c.u. Consequently, the 3474 Inuit involved in the study totaled 2699 c.u.'s.

Using these measurements, the potential daily intake of local food for the entire population was approximately 3.6 pounds of meat per c.i. per day. With this amount of meat, a gross estimate of the daily energy intake would be 2,000 kilocalories and a protein intake of 400 grams per day. This approximates the standard by the FAO/WHO (Kemp, 1975).

This research is the first major attempt to quantify the harvesting activity of the Inuit of Northern Quebec. Although it was devised as a means for determining guaranteed levels of harvesting for the Inuit pursuant to the Agreement, it is becoming clear as the research progresses that this population is indeed capable of a good measure of self-sufficiency. The increased physical well-being of the population relative to the mid-1900's combined with access to money which is the new exchange medium necessary to support hunting as a serious activity, has created a generally healthy population in terms of its ability to feed itself.

Table 1

Inuit Population of Northern Quebec
Which Participated in "The Research
To Establish Levels of Native Harvesting"

Community	Total Pop.	% Male	% Female	Consump. Units	Males Over 18	Potential Hunters
Great Whale	541	53	47	427	142	96
Inukjuaq	514	50	50	414	134	104
Akulivik	210	51	49	172	52	44
Sugluk	413	50	50	315	95	76
Koartak	124	43	57	95	24	20
Wakeham Bay	231	52	48	175	52	38
Payne Bay	265	47	53	204	54	42
Leaf Bay	95	50	50	73	22	20
Fort Chimo	670	51	49	515	151	135
George River	286	51	49	218	48	42
Pt. Burwell	77	64	36	61	22	21
Fort George	48	*	*	30	11	8
TOTAL	3474	51	49	2699	807	646

* Information on the composition of the population at Fort George was not available at the time of the research. Consumption units were assigned by applying an average of the values for the other communities.

Table 2

Total Estimated Harvest by Species Group

Expressed in Pounds Per Consumption Unit Per Day

	Fort George	Great Whale	Inukjuaq	Akulivik	Sugluk	Wakeham Bay	Koartak	Payne Bay	Leaf Bay	Fort Chimo	George River	Port Burwell
No. of Consumption Units	30	427	414	172	315	175	95	204	73	515	218	61
Total Harvest in Edible Pounds (100 lb.units)	60	1627	6864	3309	3746	4441	941	3053	1179	6433	3739	1841
Marine Mammals & Polar Bear	0.00	0.42	1.31	1.51	1.96	5.23	2.06	1.72	1.08	0.58	0.78	4.99
Large Lands Mammals	0.00	0.14	1.14	0.52	0.02	0.15	0.18	0.33	1.76	1.24	1.73	1.37
Fish	0.19	0.24	1.63	2.56	0.81	1.35	0.33	1.82	1.33	1.37	2.00	1.65
Waterfowl & Eggs	0.34	0.19	0.33	0.34	0.31	0.12	0.08	0.15	0.16	0.13	0.06	0.13
Small Game & Land Birds	0.01	0.05	0.13	0.11	0.15	0.10	0.08	0.09	0.08	0.09	0.14	0.13
Total Edible Pounds**	0.54	1.04	5.54	5.04	3.25	6.95	2.73	4.11	4.41	3.41	4.71	8.27

Access to large amounts of land is necessary to support even a partial hunting economy. This is particularly true when the major species exploited are migratory in nature. Travel and seasonal encampments accent the annual cycle of hunting activity into modern times. Increased efficiency in travelling through the use of over-snow vehicles, outboard motors and air transport have shortened the time necessary to travel to major hunting areas but they have also effectively increased the money that must be expended in order to maintain the equipment, ammunition and fuel required.

The centralization of the Inuit population into permanent communities has resulted in the necessity for hunters to travel greater distances to hunt. The high level of activity, noise and pollution in the community areas has, in many cases, caused the animal species to move to less inhabited areas further from the communities. Over-exploitation in close proximity to the villages has also reduced the available resources in these areas.

In the past, when there was such a shift in the distribution or behaviour of animals, either naturally occuring or created, the adaptive technique of the Inuit would be to move camp. This technique served a two-fold purpose. While allowing the Inuit to continue to have access to harvestable species, it also allowed the recently abandoned locales to repopulate. At present, these techniques no longer apply. The easily accessible resources may be over-exploited or driven from the area and the Inuit must travel greater distances to hunt.

The James Bay and Northern Quebec Agreement

An important question is: what happens when a population which is partially dependent on the land for subsistence, is steadily growing, thereby increasing its demands on the biological resources and on the amount of land needed to effectively exploit these resouces, is confronted with fixed land categories assigned to them for hunting purposes?

The James Bay court case and the final Agreement have provided on the one hand a recognition and protection of hunting rights, and, on the other hand, a land settlement formula which makes it impossible in the long term for future larger populations to continue to hunt at the same rate as present populations. In effect, what the Agreement has done is to acknowledge the existence and extent

of hunting activity and then to freeze it.

The land settlement, briefly outlined, is as follows. Each of the 14 Inuit communities participating in the Agreement would be entitled to 243 square miles of Category I land. These lands would be selected in order to protect the existing and planned community sites and, essentially, they encircle each community. Category I lands are directly owned and controlled by the Inuit through various land, regional government and environmental regimes. The Inuit have exclusive hunting, fishing and trapping rights on these lands, but since they are in close proximity to each community, they are subject to intensive exploitation consequently their long term productivity must be questioned.

Each community was also entitled to 1,000 square miles plus 3.5 square miles per person, in that community, of Category II lands. The calculations were fixed on a per capita basis using the 1975 population figures. The Inuit do not own Category II lands. Portions of these lands can be taken for development purposes at any time but must be replaced with "similar" lands. Unlike the negotiating process for the original selections, the Provincial Government can designate the replacement lands if no consensus is reached.

The Inuit have exclusive hunting, fishing and trapping rights on Category II lands. One of the main criteria for the seleciton of Category II lands was the protection of key harvesting areas. A total of 31,150 square miles of Category II lands were allotted. This is only a portion of the entire Inuit territory north of the 55th parallel. Land use mapping for northern Quebec has shown that the entire peninsula is utilized in modern times for hunting and travelling (N.Q.I.A. Land Use Study, 1975).

The reality now is that the Inuit have been relegated to comparatively small portions of land on which they can hunt and that these lands do not allow for an increase in population or for a change in distribution of settlements. They have exclusive hunting, fishing and trapping rights on the Category II lands, but they do not own or control them, and as development encroaches, their access to key harvesting areas could be further limited.

Category III lands are the final classification. These lands comprise the balance of the land area of the Territory. The Inuit have exclusiwe trapping rights only, on these lands.

The second important aspect of the Agreement relating to harvesting is the principle of the priority of native harvesting. Section 24.6.2 of the Agreement states:

> "The principle of priority of Native harvesting shall mean that in conformity with the principle of conservation and where game populations permit, the Native people shall be guaranteed levels of harvesting equal to present levels of harvesting of all species in the Territory."

The research described earlier is in response to this section. The goal of the seven years' study is the establishment of these guarantees based on actual harvest figures. These figures, however, will reflect only the harvesting activity and patterns of the present population. The guarantees as they apply to the future will be an understatement of the food requirements of that population.

Overruling any of these guarantees is the principle of conservation. Quotas can be applied through government wildlife agencies when animal populations appear to be threatened. That the Natives now have the right to participate in these decisions via the Agreement does not change the nature of the argument. Given the land selection formula described above, a growing population and the increasing demands of sports hunters and the effects of future development, it seems certain that quotas will indeed be applied. With no possibility for expanding their hunting territory, the Inuit will lose access to significantquantities of local food resources.

Northern Quebec represents one of the few remaining areas in the world where local resources remain in sufficient quantity to feed the resident population. Participation in a wage economy and subsistence hunting are not mutually exclusive activities. In fact, cash is now a necessity for more efficient hunting. The James Bay and Northern Quebec Agreement will legislate the hunting rights of the Inuit, but may place some restraints on the ability of the Inuit to hunt successfully and to continue to provide for themselves adequate quantities of food.

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STRESS AND RESPONSE: DEMOGRAPHIC AND CULTURAL CHANGE IN THE CANADIAN ARCTIC

RON DUFFY[1]

There has been a growing awareness of a population problem in the Canadian Arctic for at least twenty-five years. As far back as May 1952, the Department of Resources and Development of the Government of Canada organized a general meeting on Eskimo affairs at which one of the items put forward for discussion was "consideration of a long-term policy to be followed in providing for a steadily increasing Eskimo population." More recently, Milton Freeman (1971) warned us clearly about the socio-economic significance of demographic changes occurring in the Canadian eastern Arctic.

Canadians are becoming more and more concerned with the "population problem" in the North, or, more explicitly, with the problems associated with rapid population increase. However, there is evidence that the Inuit do not view these as the major difficulties facing northern development. A perusal of public statements made by Inuit leaders, and of articles published in the Inuit press, shows that the Inuit people regard the problems facing them as being caused not by an increasing population but by an incompetent administration. The problems in the North, say the Inuit, are the result of bad planning, unsound policies and bureaucratic mismanagement or procrastination.

Whatever the viewpoint, there are problems, serious problems, associated with development and cultural change in the North which have a demographic base in that they are intimately related to population numbers and distribution, fertility and mortality rates and the age-sex structure of the Inuit - perhaps it is time for northern demography to be considered in terms of people rather than of numbers fed into a computer.

The writer's concern arises out of the question: how did the problems we are aware of today arise? To answer that question is to seek answers to more particular questions. What changes

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occurred in the Inuit cultural system in the past? What were the consequences of these changes for the people involved? And what were the demographic consequences?

Looking at northern populations historically, a very typical cultural evolutionary cycle of stress appears to be: solution, further stress; further solution, and so on, with the solution to one stressful situation generating the matrix for the next stressful situation. In other words, if there were problems in the North today, there were also problems in the past, and more often than not the present problems have arisen out of solutions to the problems of the past.

The research that the writer is engaged in at present goes back no further than the Second World War. At the onset, the Inuit were hunters and trappers and only a few were involved in 'white man's work'; e.g. at Frobisher Bay, where the United States Air Force constructed an air base in 1942 and 1943. Then the bottom fell out of the fox fur market. White fox, the chief source of earned income in the Arctic, brought the Inuit $20 a skin in 1946. By 1950 the price had dropped to $3.50. Part of the drop in price was due to the dumping by the Russians of 35,000 skins on the European market at around $9.00 each. These were apparently of better quality than the Canadian skins. During the same period the cost of guns, ammunition and other essential merchandise and the already high general cost of living in the Arctic continued to increase steadily. As an example, in the early 1950s the freight rate to the more accessible regions of the Canadian Arctic was $73.00 a ton, while that charged for transportation to the most remote areas was $255.00 a ton.

The solution to the stressful post-war economic situation was twofold: firstly, increased welfare payments; and secondly, the provision of wage labour. In 1946-47 government relief to the Inuit cost $14,000. It rose to $21,000 the following year, $90,000 in 1949-50, and $112,000 in 1950-51. Family Allowances, which began to be paid in 1945, rose to $300,000 a year in 1950-51. Cantley (1950) found that the average Inuit family income in a normal year was less than $600. Of this only 28% was earned. The rest came

from Family Allowances (31%), government relief (28%) and unrecoverable debt and relief issued by the Hudson's Bay Company (13%).

At the same time as relief payments to the Inuit were increased, more and more wage labour was provided in the form of large-scale construction works, such as those at Frobisher Bay and later at the DEW Line sites that stretched across the Canadian Arctic.

The measures taken to relieve post-war economic stress had their impact on the Inuit. Stated briefly, the provision of relief, Family Allowances and jobs led to an increased concentration of Inuit in Arctic settlements. As a result the balance between ecological resources and population distribution was disturbed. Cantley (1950) wrote:

> Experience with the primitive races in both Canada and Greenland has shown that if the natives are to live off the resources of the country they must be distributed in small communities over as wide an area as possible. There are few places where the resources are sufficient to support a large population for any length of time, but there are innumerable places where a few families can hunt and often make a living indefinitely. Taking the Arctic as a whole, it may be said that there are sufficient food resources to feed the present population, provided means can be devised to distribute the natives over the available, suitable areas and assist them to preserve their native skills and independence.

Cantley's observations went unheeded and more and more rapidly the traditional camps were abandoned and the Inuit crowded into the settlements, attracted not only by relief payments and jobs but by health services and educational facilities. The new stressful situation in the North was welfare. Anders (1968) notes that between 1945 and 1966 the proportion of Inuit living permanently in hunting camps declined from 95 to 25 per cent and that the migration from camps to settlements was accelerated during 1967. The result was that settlements became overcrowded and in many cases unsanitary, with insufficient housing to accommodate the influx of immigrants. As far back as 1958, the building of igloos began dying out, and these immigrants were

now housed in shacks of wood and cardboard or in canvas tents insulated with moss. A public health nurse, quoted by Gene Rhéaume in a parliamentary debate on 13 July, 1964, described the living conditions of the Inuit in her community as 'inhuman'.

> To realise this one has to shed the romantic ideas of Eskimo life, derived from children's books and movies and walk through a settlement of Eskimo tents on a cold September night with the wind and rain lashing the flimsy tents, babies crying and whimpering, and children and adults alike coughing inside. Outside is the stench of human and dog excretion and of rotten food scraps.

Another adverse factor of settlement life was the necessary reliance on store-bought. This led to a lowering of the standard of nutrition because most Inuit women were unable to order this food wisely or to prepare it properly. Added to the declining quality of nutrition was the declining quality of clothing. There was a lack of warm skins as most of these were sold to purchase ammunition and foodstuffs. This situation, combined with the dampness and draughts of generally unhealthy tents and other forms of housing, especially in early spring and late fall, exposed the Inuit to pneumonia, the greatest single cause of death in the Arctic. Incidence of tuberculosis was also high, although declining, and this too was ascribed mainly to 'the close personal contact in crowded living quarters'.

Infant mortality among the Inuit was, and remains, excessive. In its report on health conditions in the Northwest Territories in 1961 the Department of National Health and Welfare of the Canadian Government estimated that the Inuit infant mortality rate was 193 per thousand live births compared with an Indian rate of 77 and a white Canadian rate of 21. The national rate was 27. In the eastern Arctic the infant mortality rate was even worse: 212 per thousand live births. Pneumonia headed the list of known causes of death. Another major cause was gastro-enteritis, and the report warned that there would be 'a substantial increase in the incidence of this disease unless enough attention is paid to sanitation

facilities in permanent Eskimo and Indian housing'. The following year the annual report listed five main reasons why the environment of the Northwest Territories 'reaps a harvest of death in Eskimo and Indian infants between the end of their first month of life and the end of their first year':

(i) Poor housing, lacking in shelter and inadequately heated.

(ii) Lack of sanitary facilities, which increased the spread of gastro-enteric infection.

(iii) Exposure to new strains of bacteria and viruses as the Eskimo family came into increasing contact with white men from many parts of the continent and even the world.

(iv) Ignorance of the parents as to the principles of hygiene when living in a fixed site, and ignorance of modern infant care.

(v) Lack of means to communicate quickly with the nearest physician or nurse when illness strikes.

We can regard these causes, with the exception of (iv), as contributing also to the high death rates among Inuit of all ages. In 1961 the crude death rate for the Inuit in the eastern Arctic was 22 per thousand population, almost three times the national rate of 7.8 per thousand. In 1963, according to the annual report of the Department of National Health and Welfare the average age of death for Indians in the Northwest Territories was 33.16 years; for Inuit it was 15.05 years. Excluding the high rate of death in the first year, these figures became 47.48 years and 35.9 years respectively. This high mortality rate could largely be attributed to inadequate housing as a result of the excessive immigration into the permanent Arctic settlements. Better health was clearly linked to better housing, and the obvious answer to this stressful situation was to improve the quantity and quality of housing. In 1960 the Department of Northern Affairs and National Resources had, in fact, published 'Eskimo Mortality and Housing'. This report, composed mainly of pictures ('a good picture is worth a thousand words'), gave con-

-clusive evidence of the need for improved housing in the North.

The Canadian government realised that although the cost of providing adequate housing for the Inuit would be high, so too would be the cost of medical treatment, especially when many 'cured' patients were returned to their families only to be reinfected in the cramped, crowded and often dirty conditions of native housing. A new rental housing programme was introduced by the Department of Indian Affairs and Northern Development who simultaneously embarked on a comprehensive adult education policy which included instruction not only in the legal aspects and social responsibilities of renting a house but also in budgeting a seasonal income, achieving a balanced diet, home-making, child-care and community cooperation. This reflected the government's awareness that one of the cornerstones for the framework of any positive social and economic rebuilding would have to be education, and efforts were therefore concentrated on increasing and improving educational services and facilities in the North. In 1950 only 1.3% of the total Inuit population were receiving full-time education; by 1961 this had increased to 17.1%, and by 1970 to 30.6%.

The results of these new developments were improved health, a decline in mortality and a rise in population. With a rising population and no corresponding economic improvement the lot of the Canadian Inuit could be expected to deteriorate or the cost of social welfare programmes to escalate beyond acceptable levels. Between 1951 and 1961, census figures indicated an annual increase in the Canadian Inuit population of 1.7% and a frightening 4.3% in the following decade. In Baffin Island between 1961 and 1967 the rate was 5.3%. It was about this new stressful situation that Milton Freeman expressed such grave concern (1971). In the Canadian Arctic, the question becomes

> "one of growth of capital versus growth of population and because of the accelerating demands in these regions today for improved education, health, communications, housing and other material facilities, a rapid rate of population growth generally prevents any successful attempt to remedy the prevailing unfortunate economic situation"

More solutions had to be found. These took the form of increased educational facilities, vocational training for more and more jobs, modification of the legislation relating to dissemination of family planning information, further improvement in the overall standard of living, especially in the provision of material consumer goods, and an increased urbanization following the eventual disappearance of the traditional camp way of life. All of these measures have contributed in different ways to lowering the fertility rate. The annual reports of the Department of National Health and Welfare show a drop in the crude birth rate in the Northwest Territories from 48.6 per thousand in 1961 to 37.0 in 1971. In the eastern Arctic the decline did not begin till 1967. In that year the crude birth rate was 60 per thousand, but it dropped rapidly to 37.6% in 1971. The national birth rate in 1971 was 16.3.

Indications are that although the annual average rate of population increase in the Arctic was 4.3% between 1961 and 1971, the initial rates had been high and began to decline rapidly only after 1967. Between 1967 and 1968 the rate of population increase was down to 2.7% and between 1968 and 1971 to as low as 0.5% per annum.

But new stressful situations began to appear. In 1971 the major cause of death was the multiple class of 'injuries, violence and accidents' and up to half of the deaths ascribed to this class were attributed to alcohol. The Department of National Health and Welfare reported in 1970 that alcoholism

> is an increasing problem in the Territories and while in many respects it is a social problem the effect on our mortality and morbidity statistics is so great that it is also a major health problem which is increasing in importance every year. 40-50% of deaths due to violence and accidents are usually attributable to over-indulgence in alcohol, and an increasing amount of non-fatal accidents are also due to this cause. A fair percentage of our morbidity in infants and children is related to alcohol problems in families

> with subsequent neglect of children, but this is very difficult to prove.

In the same report concern was also expressed over environmental health.

> This is becoming an area of increasing importance due to the rapid increase in the size of the settlements and the lack of adequate town planning. These have been allowed to grow haphazardly with little consideration to problems of water supply and sewage services. Many have now reached a stage where it is completely uneconomic to attempt to install piped water and sewer services without complete replanning of the layouts. Many Government-owned buildings, Federal and Territorial, are contributing to the pollution by the discharge of untreated waste and sewage in land and water, and urgent action is necessary to prevent the continuation of this unacceptable practice.

It was not until after 1974 that responsibility for the provision of water and the removal of sewage and garbage shifted from the individual to the Territorial or municipal government. Native settlements were provided with water supply and sewage services, both of which should bring about a significant improvement in environmental health and a further reduction in mortality and morbidity rates.

In 1971 a policy framework was developed to guide northern development for the decade. It commits Federal and Territorial Governments to give top priority to the improvement of the social environment in the North to enable native residents to benefit from present and future development. It is true that the number of wage earners increased significantly in the first years of the 1970s, especially as a result of the activities of Panarctic and Gulf oil interests, and it is also true that more and more native people are holding elected office at all levels of government and that their voices are more frequently heard in national debates. But underlying the positive trends in integration and native self-assertion is a pervasive social malaise. Many Inuit feel overwhelmed by foreign ideas, institutions and tech-

nology, and the stresses of rapid cultural change are manifest in critically high rates of 'lifestyle ailments': dental cares, overweight, otitis media, iron deficiency, alcohol abuse, venereal diseases, gas-sniffing, violence and child-neglect. The new stressful situations in the North are social. Rowley (1972) looks at the Canadian Inuit today with frank pessimism:

> Many settlements in the north have very grave inter-related social problems in drunkenness, juvenile delinquency, prostitution, unemployment and underemployment, and abject poverty. These problems and the resulting crime and illegitimacy rates are worst in such places as Frobisher Bay and Inuvik, where it is easy to buy alcohol and where the white population is of significant size. On the other hand, the more isolated settlements have little to attract the young, who have learned at school about the wider world. Juvenile delinquency or juvenile despondency is sure to follow unless there are satisfying outlets to absorb their energies and imagination.

The same kind of problems that are endemic to underdeveloped areas the world over are present in the Canadian Arctic today, but these are magnified by isolation, climatic harshness and communal introspection. The causes are, in most cases identical, and they result from the demographic response to too rapid cultural change, a manifestation of present, rather than of future, shock. The solutions to these problems do not appear so readily but when they do, it is certain that more stressful situations eventually derive from them. That is the nature of cultural evolution. It is also equally certain that the people will blame bad planning, unsound policies and bureaucratic mismanagement. That is the nature of people.

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"EQUALITY" AND "SPECIAL STATUS": NATIVE POLICY IN THE NORTHWEST TERRITORIES

DOUGLAS SANDERS[1]

Demographers or other researchers working in the Northwest Territories today should understand the unique character of that area in terms of Canadian native policy. They should also be aware of (a) the lack of studies on the correlation between native land policy and demography, (b) the particular nature of the Indian Act membership system, and (c) the general problem of classifications of native people in this country.

NATIVE LAND POLICY AND DEMOGRAPHY

In Canada, there appear to be no studies of the correlation between native land policy and demography. Sorrenson (1956) correlated population decline and loss of land in Maori populations in New Zealand in the late 19th century. There is, it is believed, some demographic material available in the United States, particularly on the Navajo. In Canada, demographic material on native people has dealt with early population decline, stressing the impact of imported diseases, and the later resurgence of numbers (e.g. Duff, 1964). They do not deal with the reduction of the traditional resource base or the reserve system. It is in this analytical vacuum that the Federal Government reluctantly accepted the need to settle at least four major northern land claims (James Bay in Quebec, the Yukon, the Indian areas of the N.W.T., and the Inuit areas of the N.W.T.). The first settlement, for James Bay, is now in the initial period of implementation. Extensive land use and occupancy studies have now been completed for the Indian and Inuit areas of the Northwest Territories, but only the most general notions of the demographic

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changes that new structures could bring.[2]

THE INDIAN ACT MEMBERSHIP SYSTEM

The Indian Act membership system, came into being as part of the reserve system.[3] It defines the group entitled to use reserve land. The rule that Indian women lose status on marriage to a non-Indian was originally designed to prevent white men from controlling reserve land through their wives.

The membership system is not concerned with percentage of racial descent, culture, language, perceived ethnicity or residency. As a definition of particular jurisdictional communities, the band membership lists are both over-inclusive and under-inclusive. They are over-inclusive because an increasing percentage of status Indians do not live on reserves and under-inclusive because technically illegal residents are common. Any demographer using these lists should understand that they do not contain precise racial, cultural or residential information.

CLASSES OF NATIVE PEOPLE

It is common to group Canadian natives into three classes: Indian, Metis (and other non-status Indians) and Inuit. The first class is composed of persons who are Indian within the

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[2]Professor Daniel Seiver, another participant in the workshop, confirmed, in conversation, that the Alaska native claims settlement has attracted Alaskan natives back to the state particularly from areas on the west coast of the contiguous states. He was unaware of any study of the phenomenon.

[3]The reserve system evolved over a significant period of time, beginning with the Church established reserves in New France. Legislation appears to have begun in Upper Canada in 1839. Early legislation focused on trespass problems. The present membership system can be traced back to provisions in Upper Canadian legislation of 1850. The provisions are more complete in Federal Legislation in 1869. The administration of the system was completely changed with the Indian Act ammendments of 1951. Both the Indian Act and federal Indian policy focus almost exclusively on the reserve system, rather than on Indians.

meaning of the Indian Act. The second group includes Metis[4] and other persons of Indian descent who do not have Indian status under the Indian Act. The third group are the Inuit, for whom statutory definitions are rare. These three groupings are amalgams. It is possible to list at least thirteen categories of native people in Canada, each with some distinct legal feature.

NATIVE POLICY IN THE NORTHWEST TERRITORIES

The native policy of the Canadian Government in the fertile belt of the Canadian prairies was established after 1870. The prairie lands were acquired from the natives for their agricultural potential. Treaties were negotiated with the Indians. "Half-breed" grants of land and money were made to the Metis.

By the nineteen twenties, Canadian native policy, as applied in the southern prairies, had been formally extended to the Northwest Territories for the stated reason of acquiring mineral resources. Treaty 8 was signed in 1899 and 1900 and Treaty 11 in 1921 and 1922. They are the only treaties in the Northwest Territories and apply to the Indian areas of the Mackenzie District. The treaties promised Indian reserves. The "half-breed" grants defined a separate group as Metis. The Inuit were ignored.

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[4] The term "metis" is used in differing ways in different parts of Canada. Presumably there are areas where it means mixed-blood descendants of French men and Indian women - that is, descendants of the historical population created in the west as a result of the fur-trade activities of French males. The term probably never is used today literally to mean a half-breed. It normally includes descendants of fur-trade intermarriages involving males from various parts of the United Kingdom. On the prairies and in the Northwest Territories it is common to refer to an Indian woman who lost status by marriage to a non-Indian as a "metis", a completely non-historical use of the term. In Labrador, the author is informed, children of mixed Inuit-Indian marriages are referred to as "metis". The author prefers to regard the term as encompassing the descendants of persons who took "half-breed" grants of land or money under the terms of the Manitoba Act of 1870 or the later Dominion Lands Acts. This reflects a bias towards a "legal"definition.

Federal policy focused on special status for Indian reserve communities. But the promise of reserves could not be fulfilled (or otherwise resolved) as the Indian people of the Territories showed no interest in or understanding of the reserve issue.[5] Because no reserve system was established, special status had little reality in the Northwest Territories - so much so, in fact, that the Report of the Advisory Commission on the Development of Government in the Northwest Territories (1966), or the Carrothers Report, as it has been called, substantially ignored the Indian Act and the Indian Band Councils. They had no reality in the Northwest Territories at that time.

Between 1967 and 1969, the Department of Indian Affairs of the Federal Government withdrew from the Northwest Territories, and many of their staff transferred to the expanding government of the Northwest Territories. The Territorial Government established a Department of Local Government and embarked on a programme of developing democratic local governments for the various settlements. In the process, the Indian Band Council system was ignored - the new settlement councils were to involve all segments of the population.

In the years between the Second World War and 1969, the limited elements of Indian special status that remained in the Northwest Territories were largely abandoned with the departure of the Department of Indian Affairs and the expansion of the Territorial Government, which operated on a stated policy of non-discrimination. The move from "special status" to "equality" in the Northwest Territories could have been seen as a pilot project, not an anomalous backwater. The controversial Statement of the Government of Canada on Indian Policy, widely referred to as the White Paper of 1969, pledged to bring "equality"

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5 The Indian testimony in the Paulette case, which was confirmed by historical and anthropological evidence, was that the Indian people regarded the treaties as dealing with friendly relations, welfare and non-disturbance of hunting and trapping patterns. They did not deal with land or with the establishment of a reserve system. See generally, Fumoleau, As Long As This Land Shall Last, McClelland and Stewart, Toronto, 1973.

to Canadian Indian policy, phase out the Department of Indian Affairs and end the special federal status of Indian reserve land. Indian land claims, which had earlier received some recognition in government plans for a Canadian Indian Claims Commission, were dismissed by the White Paper as vague and treaties were described as anomalous.

The Federal Government policy was defeated politically. Indian groups opposed it with a single-mindedness the government had never anticipated. Certain court decisions on Indian claims and the minority Canadian government in power in the early 1970's were important factors leading to the abandonment of the proposed new policy in the period between 1970 and 1973. As a result, the Federal Government reaffirmed the central place of "special status" in national native policy and accepted the validity of certain Indian land claims. However, the Indian claim that Treaties 8 and 11 had not ended Indian aboriginal title in the Northwest Territories did not find receptive ears in Government circles in Yellowknife or Ottawa. That claim is at present in the courts and could be the subject of extended litigation.

Immediately after the White Paper, the Federal Government began a policy of funding native political organizations, a move which was greeted with open hostility by the Territorial Government. The Indian Brotherhood of the Northwest Territories, predictably, worked for the strengthening of special status and focused on land claims as an important and unifying political issue. At the urging of the Brotherhood, Ottawa re-established a modest Department of Indian Affairs presence in Yellowknife.

The current period, with its focus on special status, is distinctly different than the earlier period in which the Federal Government extended southern "special status" native policy into the north. Much of the initiative is now in the hands of the native groups and there are clear attempts to move away from earlier patterns. Three factors seem to be especially important in the present situation:

(1) An attempt is being made by the status and non-status Indians to overcome the historical/legal categories which have divided them. The term "Dene" is fundamental in this context, as a native-initiated, single definition. The "Dene Declaration" of July, 1975, was the product of

a joint assembly of the Indian Brotherhood and the Metis Association. In at least one community, a local Dene Council has been established, replacing both the Indian Band Council and the Metis Local. However, it appears that the Metis Association is divided on the question of a common front. Some Metis joined in the Dene land claims presentation in Ottawa in October, 1976, but the Metis Association, as such, did not attend and has indicated that it does not support the claim as presented.

(2) The Dene are concerned with the potential of a native majority in the Northwest Territories. There is a native majority if status Indians, non-status Indians, Metis and Inuit are grouped together. The Inuit land claim, as presented to the Canadian Government in February, 1976, would separate the traditional Inuit areas (excluding the Mackenzie Delta) into a single new territory, Nunavut. The Mackenzie District, including Yellowknife and Inuvik, would be, the writer has been told, half Dene and half Euro-Canadian. As a result the Dene could lose the native majority within the next few years. This fear has prompted the suggestion of a ten year residency rule for voting in territorial elections.

(3) To their leadership, the Dene are a colonized people. The land claim is the hope for decolonization; an attempt to achieve political power. They have not been able to control the settlement councils, although they are in the majority in the settlements. Nor have they been able to control the rate or character of development in the Northwest Territories, being marginal to major developments there. They are challenging the legitimacy of the settlement councils by considering the possibility of Dene Councils. The resignations of George Barnaby and James Wah-Shee from the Territorial Council involved direct challenges to the political legitimacy of that government institution.

CONCLUSIONS

In the present context of the Northwest Territories decolonization is a major political question. Professor Hansen's remarks on the first day of the Workshop indicated a structural economic

relationship between Denmark and Greenland which inhabits decolonization (although that relationship seems much better than the one in our north). The main buttress of the colonial relationship here in Canada is the popular perception of the Northwest Territories as a highly subsidized region. The native people are seen as dependent, not colonized.

Decolonization, as a major theme in the evolution of the Territories, would involve a review of resource ownership, which the land claim asserts is local, not national. It would also involve a review of local and territorial governmental structures. The Dene argue for decentralized local control as opposed to centralized regional or national control. And, finally, decolonization would involve a review of the financial relationship between the Federal Government and the Northwest Territories. Ad hoc programs and policies, favoured in practice by federal politicians, are in fact threats to local autonomy. The Dene would logically argue that transfer payments should be on the basis of maximum structural certainty, to minimize the control exercised by Ottawa.

There are important unresolved questions in the Northwest Territories. They are not simple. They involve politically weak groups attempting to deal with their own internal divisions and with a complicated dominant system. The Territorial Government has limited power and looks to federal financial support for basic viability. In Ottawa northern issues are politically marginal. The responsibility for the colonial character of the situation is thus diffused. This is the specific political system with which the Dene must deal while at the same time building internal unity.

Researchers active in the Northwest Territories must have an appreciation of the unique political developments there. In a situation of power disparity, the powerful group is normally better able to use "neutral" data than a weaker group. Researchers could find themselves serving the former although they may have intended to aid the latter. Only by a clear understanding of the specific political situation can researchers hope to be truly "neutral" or serve the interests of decolonization.

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GOOD GUYS AND BAD GUYS: ETHICAL PROBLEMS IN DEMOGRAPHIC RESEARCH

D. WHITESIDE[1]

To think in terms of demography is to recall two teachers the writer had as a graduate student who were demographers. Both were excellent in the skills required not only to teach effectively but to use the available data to the best advantage. One of them was a very gentle person who was able, by his attitude, to convey his deep commitment to the field of demography as an objective and worthwhile undertaking. More important, however, he never seemed to lose respect for the people he studied, or for their uneducated responses even though some of the responses to such questions as "how do you think you became pregnant?" were humourous. By comparison, the other demographer was very brusque and, while also deeply committed to demography, always seemed to lower the entire field to a level just above that of voyeurism. He treated people, and their responses to questions, as the source for most of his crude jokes. People in any study will never come to know the principal researchers as well as I knew these teachers. Nevertheless if, as a person in a study, this knowledge had been available, I would have trusted only one demographer with personal information, for confiding in the other would have been dangerous.

These are, of course, limited examples of demographers, but it is reasonable to assume that we could rank all demographers, just as we could rank all researchers, on a scale ranging from sensitive to non-sensitive, or trustworthy to non-trustworthy.

In other words, the field of demography has certain ethical problems related to research per se which must be faced, but there may be a more important, pervasive and difficult issue which must be considered: the personal characteristics (sensitive - non-sensitive; trustworthy - non-trustworthy) of individual demographers.

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The two problem areas to be considered in this paper are firstly, problems related to the discipline of demography, and secondly, problems related to the personal characteristics of individual demographers. It will be immediately apparent that these problems are viewed as being intimately related and not restricted solely to demographers.

Problems related to the discipline of demography

Paul Reynolds, in an excellent article, Value dilemmas in the Professional Conduct of Social Science (1975), outlined two major dilemmas associated with social research and 24 ethical codes devised to resolve these dilemmas (see Appendix A). The two major dilemmas are:

> "1. The dilemma involved in attempting to balance the potential benefits from empirical research against the costs (financial support or risks to the rights and welfare of human participants) borne by members of society.
>
> 2. The dilemma involved where research (which may require societal resources and expose citizens to certain risks) is conducted in the absence of any guarantee that the resulting knowledge will be used for the general benefit of society (or mankind), rather than to advance the interests of particular groups or individuals."

It will not be necessary, given the composition of this Workshop, to review in great detail the various ethical codes which have recently been developed in order to resolve the first-mentioned dilemma. Suffice to note some of the most frequently mentioned principles or guidelines:

(1) the principal researcher is responsible for the ethical standards of the research project;

(2) informed consent should be used in obtaining participants for all research;

(3) no coercion should be used to encourage individuals to participate in research projects;

(4) the purpose, procedures and risks should be explained to the participants in a way they can understand;

(5) the dignity, privacy and interests of the participants should be respected and protected;

(6) if any deception is used, a complete description of the study and the reasons deception was used should be given;

(7) research data should be confidential and all participants should remain anonymous unless permission is given to release their identity.

Other frequently mentioned guidelines are that the researcher should ensure some benefit to the participants, either in kind or in self-knowledge, and that he or she consider the effects the research will have on the host communities and the population or sub-group.

Assuming that the first dilemma is recognized and that there is general agreement with the tenor of the proposed resolutions, there seems to be little value in belabouring the obvious any further. Surely, if all researchers follow these suggested rules of conduct which, after all, make only common sense, the dilemma will disappear. Unfortunately, the dilemma is not so easily resolved, especially in questions related to formal demographic studies of fertility, health, mortality, migration and mobility, as well as those related to social demographic studies of attitudinal and behavioural aspects of population growth and change (Freeman, 1972). Further, the dilemma is more pronounced in studies conducted in the Canadian North, or which involve aboriginal people or other minority groups. Perhaps a few examples will illustrate the complex nature of the situation.

Many will recall the case of Cheryl Acker, who interviewed Inuit in the summer of 1973, asking where and how their children had died. The Inuit became so embarrassed and angry, their Settlement Council requested the sponsoring agency, the Museum of Man, not to fund any more such studies until they were consulted (Toronto Star, June 15, 1974). It is worth noting that since this incident only

one social scientist has been allowed back in their community.

This example, of course, illustrates the need for better consultation with the people involved as to the purpose of the study and the questions to be asked. Most researchers have probably had similar problems but their failures have not been publicized - not because of any skill on the part of the researcher but rather because the people have been too disorganized or powerless to protest. Who among us can say with certainty that they have never violated the customs, folk ways and mores of a group of people while conducting field research? Perhaps the principles from the various ethical codes should be examined more closely.

The first principle cited was that of the principal researcher being responsible for the ethical standards of the research project. This principle requires no analysis as it only assigns primary responsibility.

The second principle, or guideline, is that informed consent should be used in obtaining participants in all research. But has "informed consent" always been obtained in the past?

Perhaps another example will illustrate the problem. In situations where aboriginal people have been informed of the value, procedures and consequences of voluntary sterilization, patients and even their spouses were required to sign a form which certifies that everything has been explained, they understand, and give their consent to the operation. Yet, time after time, native people have complained that they were sterilized against their will (Edmonton Journal, April 3, 1973). Clearly, these people did not understand the explanation provided by the medical profession. Thus, despite formal and legal procedures to ensure against involuntary sterilization, informed consent cannot be said to have been given. The point is simply that if, in the case of an operation, people are still confused, then we must question if they understand the project as "explained".

The third principle, or guideline, is that no coercion should be used on individuals to participate in research projects. Again, would a native person in an isolated community in the Canadian North not feel coerced when

asked by an authority figure to cooperate in the reseach project? Did the native person, who was probably economically and politically powerless, really feel free to say no, or did he or she feel compelled to cooperate in order to ensure positive rewards, or avoid negative sanctions from other authority figures or even from other members of his or her own community? One could also reflect upon the times ingratiating techniques, such as the buying of drinks and a pretense of friendliness were used to obtain cooperation in research projects (Freilich, 1970).

The fourth principle, or guideline, is that the purpose, procedures and risks should be explained to the participants in a way they can understand. Obviously, the comments regarding "informal consent" above are appropriate here. In addition, does each person in the study understand the purpose, much less the complex procedures used in gathering demographic data? Further, do they understand the risks involved in providing the information, because it is doubtful if researchers fully understand all the risks themselves. Finally, how does one ensure that the information gathered will not be used by others to the disadvantage of the people, especially in cases where the risks extend far beyond the individual and may affect the entire group as, for example, when population trends are used as the basis for the centralization or removal of a people and thus fundamentally change their lives.

The fifth principle, or guideline, is that the dignity, privacy and interests of the participants should be respected and protected. Taken literally, aspects of this guideline appear to run counter to the entire research process. Research, by its very nature, demands access to the private world of an individual or group. This is especially true in demographic studies. Questions have been asked which have often forced people to examine their fundamental attitudes towards themselves, towards others, towards reproduction, health, religion, death, etc. By asking such questions, have their beliefs been altered significantly enough to lessen the security and protection that firm beliefs provide?

One could go on, but the point has been made. These guidelines which, on face value, appear to be simple research ethics, in fact involve very complex issues and these issues cannot be resolved by reliance upon even more principles or guidelines. In the final analysis, they can only be resolved by demographers and other

researchers becoming sensitive to the needs, hopes and fears of the people they study.

One comes now to the second major dilemma outlined by Reynolds: where research is conducted, exposing people to certain risks, without any guarantee that the resulting knowledge produced by an organization or government agency will be used for the general benefit of society rather than to advance the interests of particular groups or individuals.

Significantly, only five of the 24 ethical codes contain any principles related to this dilemmaa. Clearly, once the data is gathered and analyzed, the demographer loses command over its use. This dilemma can only be resolved when the demographer becomes sensitive to the danger of collecting certain types of information and recognizes the limits to the control he or she has over this data.

Problems related to the personal characteristics of individual demographers.

As mentioned in the introduction, all demographers, and indeed all researchers, could be rated on a scale ranging from sensitive to non-sensitive, or trustworthy to non-trustworthy. Perhaps this is as good a time as any to substitute these precise concepts for the very simple and less precise categories used by aboriginal people: "good guys" and "bad guys".

No doubt some professional demographers and other researchers will feel a twinge of discomfort at the direction of these comments. After all, professionals are taught to believe, or at least to act as if they believed, that science is both free of personal bias in problem formulation and objective in analysis, and it should be noted that this ideological position is oftentimes found in practice. To native people in isolated northern communities who are economically and politically powerless, the more the demographer pretends to be free of bias in problem formulation, the more dangerous he or she becomes, and the more he or she becomes classified as a "bad guy".

One should not dismiss their analysis lightly. After all, aboriginal people have survived against a multitude of forces which have tried to make them bend. The excuses have been that the change will be better for the bureaucrat, better for the people themselves, or better for the

dominant society. Yet, they continue to survive by using their wits, and by being stubborn. Further, they can use their necessarily cunning techniques against any person or force which appears to threaten them, and this can have a marked effect on the quality of the data.

Paranoia runs deep in most humans, and it is deepened and made even more complex in situations where actual or potential mistakes threaten the very existence of a native person as a member of a viable family, community or nation. "Bad guys" to native people, then, are researchers who appear to be exploiting them in order to obtain fame and fortune outside the community, i.e. people who cannot be trusted with information because they will either misuse it, or inadvertently let it fall into the wrong hands.

"Good guys", on the other hand, are researchers who do not exploit the native people but rather help with their hopes, fears and frustrations. While the research may bring a limited amount of fame and fortune to the researcher, this is likely to be accepted as part of an exchange process, especially if the exchange is viewed by them as being more in their favour (Efrat and Mitchell, 1974). Once the value of the exchange is reversed, however, the research will tend to be classified as another attempt to gain at the expense of the people, and the researcher will become a "bad guy".

These facts of life have been long recognized in field research. Anthropologists, in particular, have learned by experience to hide the true values in the exchange process in order to obtain desired information. In recent years, however, as native people have become more organized and communication between groups has increased, they are beginning to recognize the frauds and the researchers who are dangerous to their survival. In fact, it is the tendency to consider all research by outsiders as exploitive.

In addition, native people are beginning to expect research to have positive consequences. Thus, research projects are being judged in terms of perceived value to them. The ivory tower, if it ever existed, is being worn away by increasing demands for positive answers to pressing problems.

Stress has been placed, as will have been noted, on both the increasing demand for solutions to pressing problems and the demand that these solutions be consistent with the aims and objectives of the people most concerned. It is for these reasons that the individual characteristics of the demographer are so important. If the demographer is a "bad guy", he will not understand or care to understand the problems of the native people. Information thus gathered could easily lead to policy changes which might negate or subvert their aims or objectives. Thus, in order to avoid harm, the people will hide themselves and hide their true feelings.

If, on the other hand, the demographer is a "good guy", he will be sensitive to the needs of the people as well as sensitive to their fundamental goals, and will not act in any manner which will negate or subvert them.

It has been documented elsewhere that demographic studies have been lacking in Northern Canada (Freeman, 1972). As this is a new area of research, it is hoped that demographers will learn from the past mistakes of other social science researchers and avoid the painful re-assessment and adjustments they now have to make (Rowley 1975). It will also be a golden opportunity to revive the creditability of social science research. If, however, demographers are sent to the North who are primarily "bad guys", the painful readjustment process will surely become as familiar a part of their lives as it is now to most of the other social researchers in the North (Whiteside, 1974).

There are, of course, simple solutions: humanize the discipline, make it more useful and vital to the ordinary person, and reward demographers who are "good guys".

APPENDIX A

FORMAL CODES UTILIZED FOR ANALYSIS

Anthropology:

American Anthropology Association, 1703 New Hampshire Avenue N.W., WASHINGTON, D.C. 20009	Adopted September, 1973

Economics:

Brazilian Joint Committee, Fundacao Getulio Vargas, Caixa Postal 4081-ZC-05, RIO DE JANEIRO.	No date of adoption. (Economist's Oath rather than a code of ethics.)
Colegio De Economistas De Mexico, Maestro Antonio Caso 86, MEXICO 4, D.F.	

Political Science:

Swedish Political Science Association, c/o Department of Political Science, University of Stockholm, Fack, S-104 05 STOCKHOLM 50.	Proposed in 1971-72 but not adopted by the Association.
The American Political Science Association, 1527 New Hampshire Avenue N.W., WASHINGTON, D.C. 20036	Guidelines to Ethical Problems published in summer, 1968.

Psychiatry:

The Australian and New Zealand College of Psychiatrists, Maudsley House, 107 Rathdowne Street, CARLTON 3053, Victoria.	No date of adoption (Declaration of Helsinki).

Psychiatry Cont'd:

Finnish Psychiatric Association, Meriojankuja 7, 02230 Matinkyla.	No date of adoption (Declaration of Helsinki).
Malayan Neuro Psychiatric Society, Department of Psychology, University of Malaya, KUALA LUMPUR 22-11.	
American Psychiatric Association, 1700 Eighteenth Street N.W., WASHINGTON, D.C. 20009	Committee recommended on November 3, 1967 (Nuremberg Code).

Psychology:

The Australian Psychological Society, National Science Centre, 191 Royal Parade, PARKVILLE, Victoria. 3052	Adopted August 21, 1968.
Belgian Psychological Society, Vrije Universiteit te Brussels, Johannalann 44, BRUSSELS.	
Brazilian Psychological Association, Caixa Postal 11-454, SAO PAULO.	Adopted 1962
Canadian Psychological Association, Department of Psychology, University of Toronto, TORONTO, Ontario. M5S 1A1	Current code similar to 'old' American Psychological Association code: 'new' American Psychological Association code under consideration for adoption.
The Association of Greek Psychologists, ATHENS.	No date of adoption.

Psychology Cont'd:

Netherlands Institute for Psychology, Nic Maesstratt 122, AMSTERDAM 1007.	Adopted in 1960 (New code in preparation).
New Zealand Psychological Society, Department of Psychology, University of Otago, Box 56, DUNEDIN.	Current code a modified version of British Psychological Society code; new code under development.
Norwegian Psychological Association, Bygdoy Alle 28B, OSLO 2.	No date of adoption; new code under development.
Polish Psychological Association, Zarzad Glowny, Warezawa ul. Nowy Swiat 72 p. 216	Adopted April 24, 1971.
South African Psychological Association, P. O. Box 4292, JOHANNESBURG.	No date of adoption.
Educational Psychology and Professional Counselling Section, Spanish Society of Psychology, Juan Huarte de San Juan, 1, Ciudad Universitaria, MADRID 3.	Published in 1970.
Spanish Society of Psychology, Juan Huarte de San Juan, 1, Ciudad Universitaria, MADRID, 3.	Approved by General Assembly on April 27, 1974. Currently submitted to the entire membership.
Swiss Society of Psychology, Seestrasse 110, 8002 ZURICH.	No date of adoption.
American Psychological Association, 1200 Seventeenth Street N.W., WASHINGTON, D.C. 20036	Original document approved 1953. Revision applicable to human subjects approved 1972.

Psychology Cont'd:

International Union of Psychological Science, Hogg Foundation, University of Texas, AUSTIN, Texas. 78712	Sponsored development of an advisory statement (set of principles) not submitted to membership (national associations of psychologists) for approval. (See Tapp, et al., 1974.)

Sociology:

British Sociological Association, 13 Endsleigh Street, Skepper House, LONDON W.C. 1.	Dated April, 1973.
American Sociological Association, 1722 N. Street N.W., WASHINGTON, D.C. 20036	No date of adoption.

N.B. Similar codes adopted by different associations were treated as one unique code (two national associations of psychiatrists have adopted the Declaration of Helsinki), two codes represent psychologists in one nation (Spain has one code for psychologists in general and one for educational psychologists), one national code was rejected by the members of the professional association but was included in the analysis, and one code was formulated by a committee of an international association and has no 'official' status.

Source: Reynolds (1975)

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